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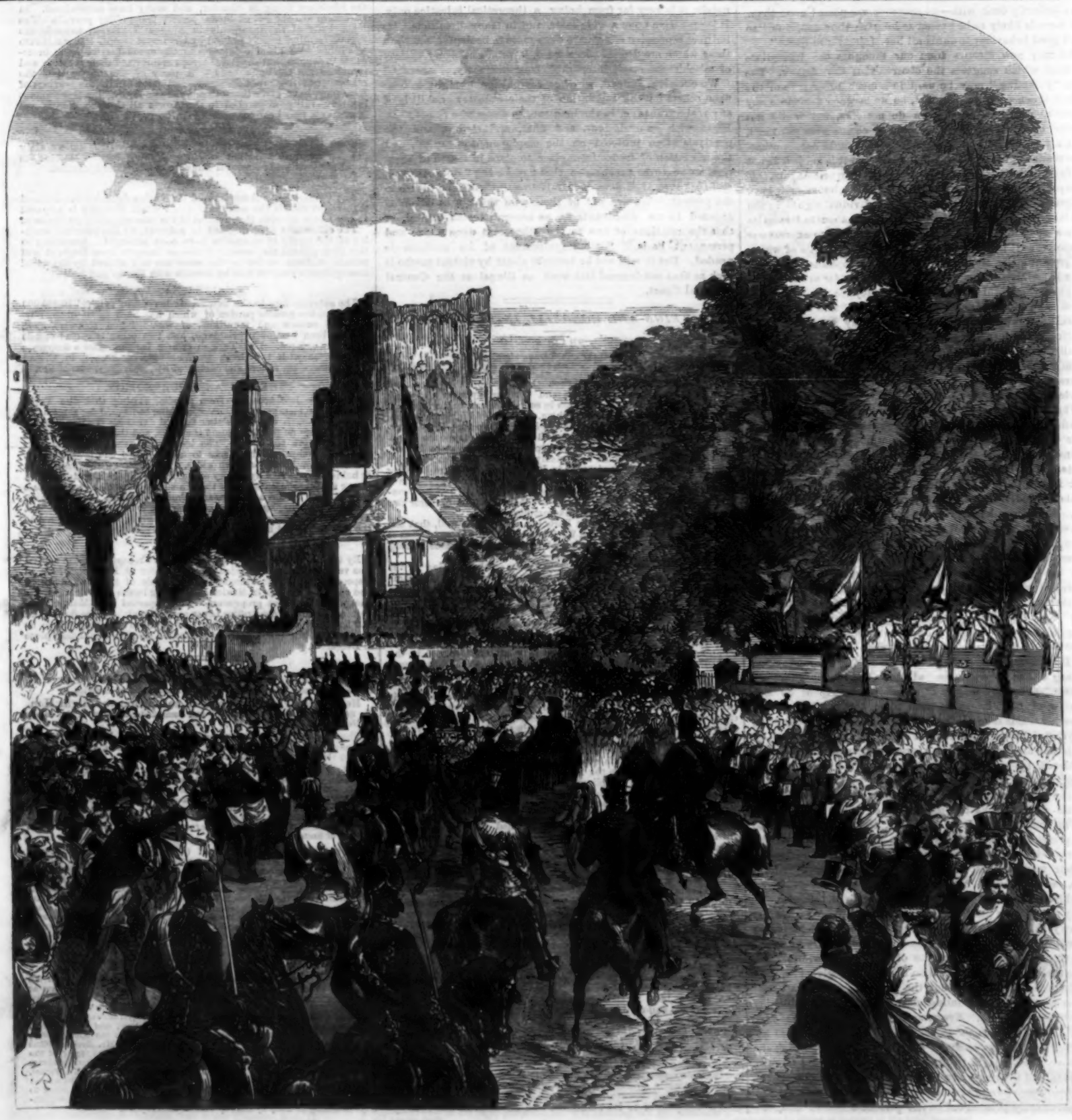


THE QUEEN'S VISIT TO THE SCOTTISH BORDER: HER MAJESTY'S ENTRY INTO KELSO,—SEE PAGE 230.

PICKETING.

THE late trials, at the Central Criminal Court, of certain members of the Operative Tailors' Association, the rule of law laid down by Mr. Baron Bramwell on the system of "picketing," the convictions which followed, and the impressive observations addressed by the Judge to the defendants before binding them over to appear and receive judgment if called upon, will have the effect, we trust, of inducing trades unions to review their ordinary practice and, once for all, to eliminate from it every trace of coercion. "Picketing," we believe, is the mildest form in which workmen on strike enforce abstinence from work upon non-union men and upon members who secretly take employment in opposition to the mandate of a union committee. It consists in placing them under close surveillance, by means of pickets so stationed as to detect all attempted intercourse between denounced masters and the operatives they may deem it their interest to employ, and, by deterrent influences, to prevent or frustrate it as far as possible. An impression seems to have prevailed among the unionists that picketing was not prohibited by the law of the land unless resort was had to personal violence, and that, between moral suasion and actual assault, any force which could be brought to bear upon recalcitrant wills was legally available for such as wished to use it. This misapprehension has at length been corrected by an authority that no trades union is likely to dispute. Mr. Baron Bramwell avowedly borrowed an expression of the defendants' counsel when he said, "it is impossible to have an effectual system of picketing without being guilty of that alarm, and intimidation, and obstruction which is a breach of the law." The guilty men were leniently dealt with—no sentence was passed upon them, and none is likely to be passed so long as they continue "to be of good behaviour towards all her Majesty's subjects."

We may now dismiss from our thoughts the immediate incident which suggests the observations that follow. The term "picketing" may be used in a much broader than the technical sense; it may, in fact, be understood to denote any resort to practices which men do not like, and would not choose to be exposed to, if freedom of choice were left them, with a view to common advantages which could not be otherwise realised. We are afraid that heresy on this subject is not confined to the working classes, although, unquestionably, it is most prevalent amongst them. There is a subtle, but mischievous, philosophy abroad, which merges all individual rights in the rights of the community. Of course, we are not about to discuss its claims upon intellectual belief, but we venture to express our opinion that it is at the bottom of many of the evils of which the present generation loudly and justly complains. There is not a little international "picketing" and, so far as experience has gone, the world has no reason to rejoice in its results. There is no end of ecclesiastical "picketing," and it would be difficult to prove that it has answered any good end. The practice is frequently had recourse to for social objects; and socially, as well as in other respects, it has signally failed. Trade "picketing" is one of the most specious forms in which it presents itself, and it is to this form of it that we propose to restrict our remarks.

What one man may not do to another for his personal benefit, two men, ten, a hundred, a thousand, may not do for their common advantage. Combination, even on the most extensive scale conceivable, adds nothing whatever to human rights. If it be wrong for an individual to overbear another with intent to profit by him, it is equally wrong for any number of individuals to employ coercive means for a similar end. If one man has no right to prescribe to another the conditions on which he shall exercise his craft—what number of hours he shall work daily, what wages he shall take, what apprentices he shall keep, what instrument or machinery he shall use—that right is not to be acquired by forming an agreement with others to assume and exercise the like kind of tyranny. Men may voluntarily part with a portion of their own liberty in concert with their fellow-men in order more effectually to secure thereby a common object; but it does not follow that what they may do for themselves, wisely or unwisely, they may do for any other in violation of his freedom. They are not entitled by any maxim of sound philosophy or by any principle of morality to trespass upon the freedom of his choice. All this is so clear that one is ashamed to repeat it; and yet "picketing," which is a direct contravention of all this, is not only practised in a great variety of forms, but is considered by many to be defensible. We are not sure, indeed, that an effort will not be made by trades unions to turn the next general election to account, and, if possible, to legalise combinations the machinery of which is unjust as well as compulsory. It is necessary, therefore, to revert to first principles, inasmuch as we are fully satisfied that the vast majority of operatives, greatly as they may be attached to their trade unions, and much as they may expect from them, would shrink from using their recently-conferred franchise in favour of what they would see to be injustice.

Any compulsory limitation of a man's freedom to use his industry, skill, or power as he judges to be most conducive to his own wellbeing, except such as may be necessary to guard from trespass or injury the rights of others, is a wrong done to the social body. It is clear to such as will give fair consideration to the matter, that the greatest good of all will be best promoted by the fullest development of the abilities and exertions of each. Every addition legitimately made by the efforts of individuals to their own happiness is also an addition made to the common stock of happiness. Nobody can justly plead a right to stand between society and its own members, and intercept any advantage which the one would otherwise receive from the other. As Mr. Baron Bramwell very pertinently pointed out to the prisoners before him, the present generation has corrected the mistakes of past generations in regard to guilds and monopolies, and no man in this country who claims to understand the first principles of economical science would now think of maintaining that national welfare can gain anything from putting restrictions upon individual enterprise or energy. It is not likely that England will now consent to retrace her steps. It will not be wise to call upon her to do so.

But not only does "picketing" in any of its forms inflict loss upon the community—it does grievous injustice to non-union men, who constitute, after all, the majority of the working classes. They who believe in the power of combination to raise their wages, moderate their labour, and improve their social condition, have of course, a perfect right to combine for such ends, and to subject themselves to any restraints they please in furtherance of their purpose. But they who do *not* believe in that power, or who think the exercise of it more costly than profitable, or who, for any other reason, prefer to retain full mastership over their own actions, have an equal right to stand aloof from voluntary bondage, and to earn their subsistence how and where they best can. If they are foolish, let them be convinced of their folly. If they labour under any misapprehension, let that misapprehension be corrected. But to exact from them any sort of penalty because their view of their own interests does not coincide with the view held and acted upon by this or that organised body of men in the same trade, is the sheerest tyranny. It is the law of the stronger, and nothing else. It can find no justification; and, unfortunately, it is very far from being a theoretical injustice only. It is operative upon a wide scale, and in many directions. Its indirect repressive effects are even more to be deprecated than those which are direct. In a word, it produces every variety of mischievous result inseparable from monopoly.

We question, indeed, whether compulsion brought to bear upon others for the regulation of their industry or skill is of any real advantage, in the long run, to those who resort to it. What with subscriptions, and fines, and strikes, and the paralysis often inflicted on the employment of capital, and the migration of trades from place to place in search of security, we venture to surmise that "picketing" does not pay, and that even if it does, it is only by sacrificing the future to the present. We are not of those who think that labour is exposed to no disadvantages as compared with capital, or that the relations of one to the other rest upon a true and permanent basis. Some improvement of its position is needed. But it will not be brought about by violent methods such as that condemned last week as illegal at the Central Criminal Court.

FOREIGN AND COLONIAL INTELLIGENCE.

FRANCE.

(From our own Correspondent.)

PARIS, Thursday, Aug. 29.

Now that the interviews between the Emperors Napoleon and Francis Joseph have come to an end the Paris papers no longer indulge in speculation, but profess in some measure to be informed of much that has taken place at them. It is the old Rhine question, say several of them, that troubles the French Emperor—Prussia, all-powerful, with Nassau, Hesse, and Baden, exactly opposite Strasburg, where the Government organs pretend she threatens France. No doubt Napoleon would now gladly see undone all that his own inaction and the Prussian victories in Bohemia accomplished for King Frederick William. The North German Confederation will be a thorn in the side of France so long as that rectification of her frontier, with the idea of which Bismarck hoodwinked the Emperor two years ago at Biarritz, remains unaccomplished.

It is rumoured, not merely at Paris but at Berlin as well, that the Kings of Prussia, Bavaria, and Wirtemberg, and the Grand Dukes of Hesse-Darmstadt and Baden intend holding a conference among themselves, as a kind of reply to the Salzburg meeting.

The Emperor and Empress left Salzburg on the morning of the 23rd, and, passing through Munich in the afternoon of the same day, reached Strasburg late in the evening, where they slept. On Saturday their Majesties arrived at the Tuileries, and on Sunday morning received something like 700 French provincial schoolmasters now in Paris, who presented an address and were complimented by the Emperor in return. On Monday the Emperor and Empress, accompanied by a numerous suite, set out for Lille, stopping on the way at Arras, where they attended service in the cathedral and listened to a municipal address. At Lille there was a general presentation and reception, followed by a grand dinner and a gala performance at the theatre. The next day the various public establishments in the town were visited. Vauban's famous fortifications, now undergoing rectification in accordance with the principles of modern warfare, were inspected, troops were passed in review, and a ball attended in the evening. Dunkirk was visited the day following and inspected in turn, the Emperor and Empress then returning to Lille, which they leave this morning for Tourcoing.

In the Emperor's speech at Arras, he said to the Mayor, "You are right to feel confidence in the future; it is only feeble Governments which seek in foreign complications a diversion from home embarrassments. But when force is derived from the mass of the nation we have only to do our duty, to satisfy the permanent interests of the country, and, while holding aloft the national banner, to guard ourselves from being led away by ill-timed impulses, however patriotic they may be." In his speech at Lille, the Emperor said, "During the last fourteen years many of my hopes have been realised, and great progress has been accomplished. Dark spots, however, have darkened our horizon. But even as good fortune has not dazzled me, so transient reverses will not discourage me. How should I be discouraged when I see from one end of France to the other the people greeting the Empress and myself with acclamations, in which are unceasingly associated the name of our son? You will aid me, Gentlemen, but you will not forget that the first condition of the prosperity of a nation like ours is to possess the consciousness of its own strength, and not allow itself to be depressed by imaginary fears, but to rely upon the wisdom and patriotism of the Government."

Paris has been in some little excitement lately at the reported marvellous cures effected by a certain zouave, named Jacob, who, after having been in the army some twenty years, and fighting in the Crimea and on other battle-fields, has settled down in the Rue de la Roquette, in the faubourg St. Antoine, where he effects cures and gives advice gratis. Marshal Forey, who was suffering from paralysis of the left side, sent for Jacob to Bourg-la-Reine, and it is affirmed that the zouave doctor effected a cure at the first séance. This got printed in the newspapers and talked about, and the crowds in carriages and on foot who attended in the Rue de la Roquette to obtain tickets giving the bearers the privilege of consulting the ex-zouave during the evening were so great that the inhabitants of the streets complained to the authorities that all business was entirely suspended for a considerable portion of the day; and, in consequence Jacob closed his cabinet, and announced that all consultations were suspended for the present. His cures are said to be effected without medicine or any kind of surgical appliances, and by the mere imposition of hands. It was much the same in Paris some eighty or eighty-five ago when Cagliostro drew daily large crowds to his residence in the Rue de St. Claude under the pretence of effecting cures in an equally miraculous manner.

The woman Frigard, recently found guilty of murdering her friend, one Mdme. Mertens, in the forest of Fontainebleau, has made a statement to the effect that she took the life of her victim by prussic acid, which she administered as ordinary smelling salts, and thereby caused almost instant death. It will be remembered, the doctors stated that death ensued from pressure upon the throat and stomach.

The Exhibition chair question has entered upon a new phase. The judgment given by the tribunals in favour of the contractor having been affirmed on appeal, the Imperial Commission have removed all the chairs away from in front of the restaurants and cafés, and thereby interfered seriously with their trade and the comfort of visitors to these establishments. The contractor, who pays the Imperial Commission 4f. per chair for seven months, now that he has obtained a decision in his favour which nothing can upset, demands the modest sum of 2f. per chair per day from the unfortunate restaurant proprietors. At a moderate computation, there must be at least 10,000 chairs outside these restaurants, which, on the above terms, would yield the handsome revenue of not less than £800 sterling per day.

Dr. Velpeau, the celebrated French surgeon, and author of several works of European repute, died on Saturday last, in his seventy-second year.

The International Anti-Slavery Conference was opened in the Salle Herz on Monday. In the absence of the Duc de Broglie, the chair was taken by M. Laboulaye. He was supported by M. Olozaga, he delegate from Spain; Mr. Lloyd Garrison and Mr. Palfrey, from he United States; Prince Albert de Broglie, and several influential members of the British and Foreign Anti-Slavery Society. Their proceedings have attracted much notice.

SPAIN.

Official despatches published at Madrid this week state that Catalonia has been completely cleared of the insurgents. In Aragon the rebels are flying in disorder, and many have surrendered. In Saragossa and the rest of Spain perfect tranquillity prevails. The main body of the insurgents in Aragon is moving towards the French frontier, closely pressed by the Royal troops. General Manso was killed with his aide-de-camp in the encounter with the insurgents in Aragon, but the Royal troops maintained their position and recovered the General's body. A party of 480 insurgents, the remainder of the bands of Rleada and Baldrich, in the province of Barcelona, have given themselves up. The Portuguese Government has temporarily dispatched to the Azores all Spanish officers and immigrants who have taken refuge in Portugal.

ITALY.

The total amount of Church property which will be immediately put up to public action is 150,000,000f. Signor Rattazzi is negotiating with the National Bank to secure its co-operation.

AUSTRIA.

The Conference of Austrian and Hungarian deputies has declared that 25 per cent is the maximum quota which Hungary is prepared to contribute towards the payment of the interest of the public debt.

The differences with England in reference to the practical working of the treaty of commerce have been arranged. According to this arrangement the present duties on imports from England will remain in force so far as the same are not altered by the tariff arrangements entered into by Austria with France and Italy.

GREECE.

The subscriptions to the new Greek loan have reached 10,000,000 drachmas, the greater portion of which has been spent in the purchase of vessels and munitions of war. Three steamers have already been bought in England, and two other iron-clad vessels have been ordered. The Turkish cruiser Izzidin, after a desperate engagement with the Greek blockade-runner Arcadi, in Cretan waters, drove her ashore and destroyed her, with great loss of life.

THE CRETAN INSURRECTION.

There are late accounts from Candia, stating that the Turks attacked the insurgents at Omalos, fighting continued for three days. Upon the fourth day the Turks entered Omalos. The insurgents set the houses on fire and closed the wells, and the Turks were then obliged to leave the town. The insurgents being reinforced, pursued, and compelled the Turks to descend into the level country. Several were killed on both sides. Fighting still continued in Sphakia. Fevers and dysentery prevailed among the Turkish troops. Greek accounts maintain that the Mussulmans continue to massacre women and children. Russian, French, Italian, and Prussian vessels were bringing numbers of women and children into Greece. The blockade-runner Union continues her voyages, conveying aid to the insurgents and bringing off Cretan refugees.

MEXICO.

By the latest news from Mexico, Juarez's reception at the capital was very enthusiastic. Tejada, the Minister of Foreign Affairs, in a speech at a banquet, eulogised the example of the United States, and spoke of the war in Mexico as a lasting lesson to two classes, the clergy and the great proprietors. It is reported that Marquez had been captured and the traitor Lopez assassinated. Prince Salm Salm had been sentenced to be shot. The Mexican Congress was to be convened in November. The presidential election would take place in December.

The Queen has been pleased to approve of Mr. George R, Latham as Consul at Melbourne for the United States of America.

Her Majesty has been pleased to appoint the Right Hon. the Earl of Belmore to be Governor and Commander-in-Chief of the colony of New South Wales.

The Queen has been pleased to approve Mr. William Crosby as Consul at Hobart Town, and in the jurisdiction of that port, for his Majesty the King of the Netherlands.

A Trieste letter mentions the opening a few days since— without any ceremony, on account of the mourning of the Imperial family of Austria—of the famous railway over the Brenner, which unites Southern Germany with Italy. The journey was made under the best conditions; the train left Bolzano at half-past seven in the morning, and arrived at Innspruck at one in the afternoon. The event is of the greatest importance to the commerce of Venice, by opening to it, across the Alps, the whole of the vast markets of Eastern Germany.

There are good accounts of the sojourn of their Royal Highnesses the Prince and Princess of Wales at Wiesbaden. The Princess is taking baths at her house daily, and though her knee is quite stiff, she is looking better. She takes drives daily, and may be seen on the balcony of her residence playing with her children. The Prince bathes and breakfasts every other day at the Hôtel de la Rose; lounges and chats with his friends; risks a few gold pieces at the tables, walks about in the crowds alone, takes his coffee under the trees at the Kursaal, and is not in any way annoyed either by foreigners or the English. He looks well, full of health and enjoyment. As the chase commenced in Nassau on the 24th, and there is plenty of game, he will have some shooting in the Royal, formerly the ducal, demains. A youthful Prince of Prussia is there, with whom he appears to be intimate.

The works on the Mont Cenis Summit Railway, of which we gave some Illustrations, with a full description, a year or two since, are at length finished, and on Monday last an engine ran from St. Michel to Suse, the termini of the line, conveying Captain Tyler, R.E., specially commissioned by the Board of Trade, with a view to new postal arrangements; the Duke Vallombrosa, Mr. Brogden, and Mr. Fell, directors; and Mr. Brunlees, engineer to the company. There were also present at the opening trip, which was most successful, Captain Bowmont, R.E.; Mr. Beal, resident engineer; Mr. Blake, who has carried out the works for the repair of the ordinary road for Mr. Brassey; Mr. Alexander, under whose superintendence the engines required for the service have been constructed; and Mr. Barnes, locomotive superintendent. It is expected that the railway will be opened for public traffic in October. It will enable passengers and mails going to India by the Brindisi route to travel all the way from Calais to the southernmost extremity of Italy by railway without interruption.

METROPOLITAN NEWS.

The new Metropolitan Traffic Act abolishes sixpenny cabfares after Nov. 1.

The fourteenth party of artisans visiting the Paris Exhibition, under the auspices of the Paris Excursion Committee, left London on Friday week by the Dover and Calais route from Ludgate-hill.

At the recent Oxford Middle-Class Examinations held in London, ten boys were sent up from the Royal St. Anne's Society's Schools, Brixton-hill, all of whom passed. Two boys obtained the A.A. degree.

The statue of the late Mr. Cobden, to be erected at the lower end of High-street, Camden Town, between Mornington-crescent and Oakley-square, is almost ready to be placed on its pedestal. It is of stone, and sculptured by Mr. Wells.

The Registrar-General's return for the week ending Saturday last shows a considerable decrease of mortality compared with the preceding week. The number of deaths registered was 1247, which is 65 less than the average for that week of the year.

The guardians of the Holborn union, with the sanction of the Poor-Law Board, have purchased an extensive freehold property on the north side of their workhouse, on Mount-pleasant, for an infirmary and other buildings in connection with the workhouse.

Lady Panmure's remains were removed from Paris to their final resting-place, in Mr. Power's vault, at Kensall-green Cemetery, on Saturday. On the coffin was the following inscription:—"Elizabeth, Lady Panmure, born the 19th Jan., 1799; died on the 25th of June, 1867."

Lord Foley, Mr. A. W. Franks, and Mr. John Webb have been requested by the Lord President of the Committee of Council on Education to act as a committee to recommend purchases at the Paris Exhibition out of the Parliamentary vote for the purpose of buying specimens of artistic jewellery and other articles to be placed in the South Kensington Museum.

The eminent physical philosopher, Dr. Michael Faraday, late Professor of Chemistry at the Royal Institution, died last Sunday, at the age of seventy-three, at the house which her Majesty gave him at Hampton Court. He had been connected with the Royal Institution since 1813. A portrait and memoir of this estimable man of science will shortly appear in our journal.

The gardens of the Royal Horticultural Society, at South Kensington, were opened gratis on Monday, for the fourth time, in honour of the birthday of the late Prince Consort. Many people went there, including the children of various London charity schools and Sunday schools; but the rain in the afternoon spoiled all their pleasure. Several bands of music were in attendance.

The Incumbent of St. Matthias, Poplar, writes that 168 persons were sent out to Quebec, on Thursday last, from the distressed classes in that neighbourhood. They were families utterly destitute, and had to be supplied with every requisite for the voyage. At present 235 persons in all have been sent out, and forty or fifty more have been forwarded to various parts of England, where they have obtained employment.

A silver tea service was presented, on Friday, by Mr. N. Furdonjee and other gentlemen of Bombay, at the rooms of the East India Association, to Miss Mary Carpenter, of Bristol, as a testimonial of their gratitude for her recent exertions, during her visit to India, to promote the establishment of schools for native Indian girls. Sir Bartle Frere, the late Governor of Bombay, presided at the meeting.

A meeting was held on Monday evening in the vestry-room of St. George's-in-the-East to present a testimonial to the Rev. G. H. M'Gill, M.A., of Brasenose College, Oxford, Incumbent of Christ Church, Watney-street, in recognition of his efforts, extending over many years, to promote the equalisation of poor rates. Mr. C. S. Butler, M.P., presided. The testimonial consisted of a silver dinner service and a clock. The amount raised was £250.

On Sunday afternoon about 10,000 of the skilled artisans of London, their wives and families, assembled at the Crystal Palace, it being the free Sunday granted by the directors every year to the officers of the trade societies, benefit and friendly societies, and other associations of workmen. The palace was opened at one o'clock, from which hour until dusk the visitors promenaded the buildings and grounds, and there was a performance of sacred music on the organ.

The poor-law unions in London are to be considerably altered by an order of the Poor-Law Board under the new Act. It is intended that the parish of St. Anne shall be incorporated with the parish of St. Giles and St. George, Bloomsbury, and form together a new union; that the parish of St. Clement Danes and the Liberty of the Rolls shall be added to the Holborn Union; and that the parishes of St. Martin's-in-the-Fields and St. James, Westminster, be added to the Strand Union.

A meeting of journeymen tailors was held, on Monday, at the Cambridge Hall, Newman-street, to receive a report from the central committee in relation to the strike and the late trials. The meeting was confined to the men out on strike, and about 1500 were present. It was stated there was some probability of an amicable settlement of the dispute being brought about, the pickets being withdrawn, which were the great source of irritation and annoyance to the masters. In the meantime the strike is still to continue. The subscriptions received by the committee up to the present time in support of the men on strike amount to about £20,000, nearly one half of which has been contributed by the tailors of the United Kingdom.

The body of the late Duke of Northumberland, after lying in state on Monday, in the great dining-room of Alnwick Castle, guarded by the Percy Artillery Volunteers, was brought up to London on Wednesday evening, preparatory to interment in the family vault in Westminster Abbey yesterday afternoon. The body was conveyed to the metropolis by the Great Northern Railway, and, on the train arriving at King's-cross, was placed in a hearse, which, followed by two mourning-coaches, with the chief members of the domestic household, proceeded direct to Northumberland House. There was no lying in state at Northumberland House, and the funeral was conducted in the most private manner at the Abbey. The full choral service was dispensed with. It was in strict accordance with the wishes of the family that all unnecessary pomp should be avoided. The bell of St. Martin's Church tolled from sunset till the remains of the late Duke were placed in Northumberland House.

A special effort is being made to increase the usefulness of the Printers' Almshouses, whereby an asylum is provided for the working printer and his widow in declining years. Ever since the foundation of the Printers' Almshouses at Wood-green, the necessity for their establishment has been painfully demonstrated by the want of additional accommodation, and the evil to be baffled with has steadily outrun the means that could be collected to contend with it. The council have effected a union of the Almshouse Fund with the Printers' Pension Corporation. With the view of inaugurating this amalgamation of the two funds, an endeavour is now being made to collect a sum sufficient for the purpose of erecting a wing to the present building, to be called the "Celebration Wing." Contributions are solicited from all who are interested in literature. In order to commence the subscription, Mr. W. H. Collingridge, proprietor of the *City Press*, has presented 100 gs., on the condition that 900 more be raised to complete the sum required. Subscriptions will be thankfully received for this special object by the collector, Mr. C. Pope, 14, Derby-street, Argyle-square, W.C.

THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

THIS association will commence its thirty-seventh annual meeting on Wednesday, Sept. 4, at Dundee. The first general meeting will be held in the Kinnaird Hall on that day, when Mr. W. R. Grove, Q.C., M.A., F.R.S., &c., will resign the chair, and his Grace the Duke of Buccleuch, K.G., F.R.S., &c., will assume the presidency, and deliver an address. The different sections will assemble in the rooms appointed for them, for the reading and discussion of reports and other communications, on Thursday, Sept. 5; Friday, Sept. 6; Saturday, Sept. 7; Monday, Sept. 9; and Tuesday, Sept. 10, at eleven a.m. precisely. The committees of sections will meet in rooms adjacent to the section rooms, at two p.m. on Wednesday, Sept. 4, and at ten a.m. precisely on the other days. Persons desirous of reading communications in any section are requested to give early notice of their intention, by letter, addressed to the assistant general secretary.

The sections are the following:—

A (Mathematical and Physical Science)—In the High School: President, Professor Sir W. Thomson, D.C.L., F.R.S., &c. B (Chemical Science)—In the High School: President, Professor Thomas Anderson, M.D., F.R.S.E. C (Geology)—In Panmure-street Chapel: President, Mr. Archibald Geikie, F.R.S., F.G.S. D (Biology)—In the High School: President, Professor Sharpey, secretary R.S. E (Geography and Ethnology—In the Albert Institute: President, Sir Samuel Baker, F.R.G.S. F (Economic Science and Statistics)—In Euclid-street Chapel: President, Mr. M. E. Grant-Duff, M.P., M.A. G (Mechanical Science)—In Watt Hall, Constitution-road: President, Professor W. J. Macquorn Rankine, LL.D., F.R.S. The sectional officers will be proposed for election to the General Committee on Wednesday, Sept. 4.

The following general and evening meetings have been arranged:—

On Wednesday evening, Sept. 4, at eight, in the Kinnaird Hall, the president's address. On Thursday evening, Sept. 5, at eight, in the Volunteer Hall, soirée. On Friday evening, Sept. 6, at 8.30, in the Kinnaird Hall, a discourse will be delivered by Mr. Archibald Geikie, F.R.S., director of the geological survey of Scotland, on the Geological Origin of the Present Scenery of Scotland. On Monday evening, Sept. 9, at 8.30, in the Kinnaird Hall, a discourse will be delivered by Mr. Alexander Herschel, F.R.A.S., on Shower Meteors. On Tuesday evening, Sept. 10, at eight, in the Volunteer Drill Hall, soirée. Wednesday, Sept. 11, concluding general meeting, at three p.m. Excursions on Saturday, Sept. 7, and Thursday, Sept. 12.

NAVAL AND MILITARY INTELLIGENCE.

ADMIRALTY.

T. W. B. Pike to be Retired Captain in her Majesty's Fleet.

F. R. Henwood, G. Marsh, W. H. Harris, A. Balliston, B. Sturgess, G. Fox, W. Mayes, G. Raymond, C. Burney, G. H. Inskip, J. W. H. Harvey, R. B. Stuart, H. B. Akaster, J. M. Share, J. Kiddle, W. H. Sharp, F. Inglis, A. Brown, R. L. Cleveland, M. G. Argulumbeau, J. G. Dathan, J. Thompson, W. B. Shellabear, E. Swain, R. C. Dyer, G. S. Aldricks, W. G. Aldrich, J. T. C. Clements, H. F. Ward J. C. Selfleet, T. A. Hull, J. Wyre, R. Wilds, C. G. Johnston, D. Moore, G. D. Parry, W. P. Hains, F. W. Rea, W. H. Fawckner, H. S. Ley, and D. Hall to be Staff Commanders of her Majesty's Fleet.

Lieut. the Hon. J. R. Vivian to be Commander in her Majesty's Fleet.

Sub-Lieuts. E. F. Ward, A. W. Hamilton, and L. A. Beaumont to be Lieutenants in her Majesty's Fleet.

J. Lennon, J. E. Harvey, T. G. Punnett, and T. J. Warburton to be Engineers in her Majesty's Fleet.

E. Winshurst and W. Pearson to be Acting Engineers in her Majesty's Fleet.

Royal Marine Artillery: First Lieut. and Quartermaster J. C. Crawford and First Lieut. and Adjt. J. C. R. Colomb to be Captains; First Lieuts. R. B. Gardner, J. F. Crace, C. F. Heaslop, H. L. Bourchier, G. L. Tupman, C. C. Suther, C. W. Nothergill, First Lieut. and Adjt. H. I. de Kantzow, First Lieuts. S. T. Bridgford, C. J. Kinsman, W. D. Welch, W. Stewart, and C. B. Smith to be Second Captains; Second Lieuts. E. H. B. Northcote, A. Tupman, V. D. Mathias, B. G. Hall, F. Roberts, G. A. N. Kitson, W. Miller, G. M. S. Douglas, W. Campbell, and A. Allen to be Lieutenants.

Royal Marine Light Infantry: First Lieuts. V. W. Stace, R. L. Price, T. M. Hewett, G. Johnston, A. Macintosh, H. T. S. Davis, C. W. Carlyon, and W. W. Allnutt to be Captains; First Lieut. H. T. M. Cooper, First Lieut. and Quartermaster A. W. D. Smith, First Lieuts. J. C. Hore, A. Hill, W. N. G. Johnson, J. M. Moody, S. R. Buckle, First Lieut. and Adjt. C. L. Owen, First Lieuts. G. F. Gamble, S. E. W. Hemmane, E. H. White, First Lieut. and Adjt. A. Fonblanque and M. A. H. J. Heriot, First Lieuts. R. D. Kenwicott and G. C. Hosse, First Lieut. and Quartermaster W. M. Pritchett, First Lieut. G. M. Showell, First Lieut. and Adjts. J. M. Hamilton and J. W. Scott, First Lieuts. S. T. Collins, G. H. Elliott, W. W. G. B. Willis, J. G. Fitzgerald, and W. E. Despard, and First Lieut. and Quartermaster W. J. Barker to be Second Captains; Second Lieuts. F. Baldwin, E. H. Parker, J. Craigie, A. E. Spearhott, J. A. R. M'Kechnie, W. J. Allen, W. G. James, F. R. Drury, C. Waddy, L. H. G. Cross, H. Sandwith, R. E. Kirchhoffer, R. D. D. Jervois, E. B. Bryck, A. B. Crosbie, A. H. Blaxland, J. H. Price, A. H. Des Barres, R. W. Heathcote, R. P. Coffin, A. A. Crespin, J. C. Wardell, P. W. B. Yates, W. Wilmot, T. A. Le Breton, W. H. M'Cheane, C. A. R. Mustera, G. A. E. Gore, H. C. Horrocks, T. W. Dowding, A. R. Chapman, J. M. Hume, F. A. Crocker, H. C. R. Macpherson, J. Hobart, W. G. Ramsay, B. St. Leger Danny, A. D. Corbet, H. R. Carter, J. F. Laxmoore, E. A. M. Liardet, H. Olive, J. N. Emra, R. C. P. Hamilton, T. F. D. Bridge, E. B. Dunne, J. Le Cocq Robilliard, C. Bromley, J. A. A. Eckford, A. Polkinghorne, M. B. Seagar, H. R. B. Owen, W. H. Hobbs, E. J. W. Noble, E. R. M. Crooke, O'Hara J. Tobin, A. C. Smyth, C. B. G. Dick, E. Rice, A. St. Leger Barrowes, J. E. Jekyll, F. J. Short, C. E. Loafe, W. H. Poe, H. E. Robbins, G. H. Cooke, F. M. Faulkner, G. Gillman, C. G. Gordon, H. B. Woods, H. H. Morgan, J. R. Wards, and C. G. Haroton to be Lieutenants; Lieut. F. F. Thompson to be Second Captain.

The above promotions in the Royal Marines were made consequent on the reorganisation of the corps under her Majesty's Order in Council of Aug. 3, 1867.

An order from the War Office has been issued limiting the number of soldiers who are to receive permission to marry to 7 per cent of the whole establishment of a corps, and further requiring that no man shall obtain such permission who is not in possession of a good-conduct badge. At the same time, the privileges of married soldiers are greatly increased.

The 70th and 76th Regiments having been presented with new colours, the old colours were on Tuesday deposited in the Church of All Saints, at Aldershott, with the usual ceremony, in the presence of Lieutenant-General the Hon. Sir James Yorke Scarlett, K.C.B., commanding the division.

On Wednesday the troops at Aldershott had a field day and sham fight. They were divided into two portions; the first under the command of Major-General Campbell, C.B., representing an enemy, consisted of the 48th and 66th Regiments, with two batteries of Royal Horse Artillery. The defending force, under Lieutenant-General Sir James Scarlett, consisted of the 1st and 3rd infantry brigades, the cavalry brigade, and several batteries of horse and field artillery.

The Mediterranean squadron, under the command of Lord Clarence Paget, C.B., consisting of the flagship Caledonia, ironclad; Royal Oak, ironclad; Prince Consort, ironclad; Arethusa, screw wooden frigate; Endymion, screw-frigate; and Cruiser, screw-corvette, have left the harbour of Spezzia. Their destination is, as usual, a matter of conjecture; it is supposed they rendezvous at Port Ferrajo, in Elba. It is probable the squadron will return shortly to Spezzia, or perhaps look in at Villafranca. The mails are still consigned to Marseilles.

There is much stir in the steam-shipping trade of Liverpool on account of the Government service in the Abyssinian expedition. On Tuesday no less than fifteen steamers were placed under special survey, and five of these were at once accepted. The names of the vessels chartered and under survey for the carrying of troops are as follow:—City of Dublin, Bosphorus, City of Manchester, France, The Queen, England, Helvetia, Hector, Carolina, Pacific, Lybia, Peruvian, Golden Fleece, Mauritius, and Californian. These vessels will, after Government acceptance, proceed round to one or other of the Admiralty ports for the purpose of taking supplies on board. They are to be at Bombay, if possible, in November.

The Lords of the Admiralty, comprising the Right Hon. H. T. L. Corry, M.P., First Lord; Vice-Admirals Sir Alexander Milne, K.C.B., and Sir Sidney Dacres, K.C.B.; Rear-Admiral George H. Seymour, C.B., M.P.; Mr. Charles Du Cane, M.P.; accompanied by Lord H. G. Lennox, M.P., First Secretary to the board, and Captain Brandreth, R.N., private secretary to Mr. Corry, were at Portsmouth, at the end of last week, for their annual visit of inspection to the dockyard and other naval establishments at the port. A new feature in the programme on this occasion was the inspection of the Royal Marine Artillery and the Royal Marines Light Infantry on Southsea-common. The troops assembled on the common—the artillery from Eastney and Fort Cumberland, and the light infantry from Forton—on Monday morning, and, after the usual march past, were put through a series of evolutions incidental to a review, concluding with an advance in column and grand salute. The Lords of the Admiralty have gone on to inspect Portland and Devonport.

The Abyssinian expedition, which is now decided upon, is to take place as soon as the necessary transports reach India. The command will be assumed by Sir Robert Napier, Commander-in-Chief at Bombay, with Sir Charles Staveley as second in command. The forces employed will comprise all branches of the service. The infantry will consist, most probably, of two of her Majesty's regiments of the Line, one of which will be a battalion of the 2nd (Queen's Own), and eight regiments of Native Punjaubee Infantry. The cavalry will be composed of about six regiments of Indian irregular troops, while the artillery will include, besides mountain guns, two batteries of Royal Artillery. It is reported that his Highness the Viceroy of Egypt has been requested to provide 5000 camels for the necessary transport of the troops, and Government is also taking measures for the collection of mules suitable for the service of the expedition. It is likely that Mr. Clements R. Markham, F.R.G.S., the traveller and naturalist, will accompany the expedition in a civil capacity.

The following is the list of successful candidates for naval and navigating cadetships in the Royal Navy, out of ninety-nine candidates, at the Royal Naval College, Portsmouth. The candidates passed their examinations in order of merit as their names stand numbered on the list:—Naval Cadets—1, John A. B. Milton; 2, Pascoe G. Froude; 3, Clarence E. H. Messum; 4, George T. Wingfield; 5, Albert W. M'G. Finlay; 6, William F. Tunnard; 7, Charles R. F. O. Graham; 8, Wittingham Franklin; 9, William Charles Armstrong; 10, Edward Lewis Lang; 11, Henry Balsam; 12, Charles L. Daniel; 13, Henry M. Braithwaite; 14, William W. Smythe; 15, Arthur J. Loane; 16, William Willison; 17, Hiward H. Marsh; 18, James Knowles; 19; Frederick E. Poulter; 20, Hubert E. M. Bourke; 21, Henry W. Hennell; 22, Frederick W. Shortland; 23, Monitrie B. Fowle; 24, Algernon R. A. Mends; 25, Robert J. Yardley; 26, Robert A. C. Montagu; 27, Henry J. Davison; 28, Hercules F. A. Robinson; 29, Alfred R. A. Stock; 30, Henry F. C. Cavendish; 31, Watkin O. S. Pell; 32, Wilfred Powell; 33, William H. Milner; 34, Hon. R. R. Gifford; 35, Frank F. Bone; 36, Patrick C. Dudgeon; 37, W. R. H. Edwards; 38, Joseph G. G. Rickford; 39, William Ainger; 40, George H. Miller; 41, Edward P. Smythias; 42, Walter W. H. Fitzsimons; 43, Charles S. Elliot; 44, Henry B. Cooper; 45, Edward Thompson. Navigating Cadets—1, Douglas M. Allen; 2, Francis T. Barr; 3, Michael S. Beatty; 4, Frederick T. Bonar; 5, Henry James; 6, Robert W. Glasspole; 7, Arthur G. T. S. Hill; 8, Frederick W. E. H. Smith; 9, James Tait.

THE VOLUNTEERS.

The annual inspection of the 1st London Engineers took place on Saturday evening, at the engineering practice-ground, Copenhagen-street, Islington. Colonel Ewart, R.E., was the inspecting officer, and the corps was under the command of Lieutenant-Colonel H. Garnet Man. The battalion was composed of four companies of twenty-three files, with a squad of about fifty recruits in the rear. Colonel Ewart said he was glad to see that they had so successfully recruited since he inspected them last year. He now had the pleasure of seeing a muster more than twice as strong as upon that occasion, and, considering the number of new members in the ranks, he was no less surprised than pleased at the manner in which everything had been performed. He regarded it as satisfactory evidence of the efforts which must have been made by the officers and instructor (Sergeant-Major F. Hill, R.E.), to have brought the corps to so very creditable a state of efficiency. It would be his duty to make a satisfactory report to the War Office.

On Saturday the prize meeting of the London Rifle Brigade, commenced on the previous Saturday, was continued at the ranges of the regiment at Plaistow, under the superintendence of Captains Ewans and O'Callaghan, the Adjutants of the regiment, and the contest of that day was the most interesting, the shooting for the gold medal of the brigade being only permitted to be competed for by the winners of the twelve company silver medals. The silver medals were contested for in two competitions—that is, twice up the range at 200, 500, and 600 yards, seven shots at each range, Sergeant Falconer, of C company, and Corporal Davis, of D company, being the best shots in their respective companies, though they did not win prizes in the aggregate. The aggregate competition consisted of two stages—viz., first stage seven shots at 200, 500, and 600 yards; and the second or final competition at long ranges of 650, 700, 750, and 800 yards, five rounds at each range. The competitors were eight in number. Private J. M. Gardner became the winner of the gold medal of the brigade, having made the highest aggregate score at the three competitions. The shooting did not terminate till nearly dusk.

A rifle contest in connection with the Bank of England Rifle Association commenced on Monday, at Wormwood-scrubbs, and is now brought to a close. The association has been in existence for two or three years, but until the present year its operations have been on a very limited scale. Of the 200 volunteers in the bank, nearly half that number took part in the competition.

On Friday week the West Middlesex Rifles gave an assault-at-arms in the splendid gymnasium belonging to the brigade of Guards in St. John's-wood.

The Leicester-square (Artillery) corps have had some carbine-shooting at Purfleet. Captain Monkton's battery won the battery challenge cup.

The Southwark Rifles (the 7th Surrey Volunteers) held their annual prize-shooting last Saturday, at Wimbledon, firing for eleven series of prizes.

PARIS FASHIONS FOR SEPTEMBER.

CHANGES in fashion at this particular season of the year have to be sought for not so much in the French capital itself as in country resorts and at the various watering-places; for the *grand monde* has now fled from Paris, which is given up to foreigners and provincials. The novelty of the hour, born of the hot summer weather and destined to live, perhaps, no longer than the butterflies, is the white lace or figured muslin paletot, worn over a coloured slip and fitting close to the figure. This is mostly for indoor wear; for walking dresses short robes *à deux jupes*, usually, by-the-way, of contrasting colours, are as largely in favour as ever; robes *à queue* being almost exclusively worn as carriage and visiting dresses. At the seaside, the long *redingote* of poplin or thin cloth, and silk sash, tied in large bow behind, are very generally met with. Except in Paris, bonnets seem to have given place to hats, which are worn in every variety of shape, usually with veils falling over the chignon, and trimmed either with wreaths of flowers or leaves, feathers or gilt ornaments; wreaths formed of bunches of fruit or berries are gradually disappearing. Bonnets are still worn with lace strings, which are, however, not tied, but fastened with a flower or gilt ornament on the breast. Occasionally with out-door costumes similar flowers or ornaments are worn on one side of the chignon. Black and coloured kid and silk shoes, ornamented with rosettes or small ornamental buckles, surrounded by complicated bows of ribbon, and with very high heels covered with the same material as the shoe itself, are much in favour in the country and at the seaside. Hungarian boots of undressed russia and various coloured leathers, stitched with silk of some contrasting colour, and ornamented with tassels, bows, or rosettes, are also generally worn. Chignons are arranged higher on the head than ever, and are usually elaborately plaited; long curls, too, fall from behind the ears on one or both sides of the head over the shoulder; and occasionally a long *natte* of hair is worn falling down the back.

The white lace or muslin robes are usually worn over brilliant-coloured silk jupes; a particularly elegant one was cut square and low at the corsage, and had long loose-hanging sleeves, showing a rose-colour jacket with narrow lace frill and tight sleeves beneath. The under jupe was of the same tint, and had a deep-plaited flounce at the bottom. Over the muslin robe, which fitted the figure, and the skirt of which was looped up in festoons, fastened with rosettes of lace and rose-colour ribbon, a pink silk sash, bordered with white lace and tied in a large bow behind, was worn. The under jups in these costumes may be blue, mauve, green, or amber, as well as rose-colour; still, the latter is the tint that seems to be generally preferred.

The prevailing colours for robes *à deux jupes* in Paris are two shades of Bismarck brown, grey and blue, grey and mauve, and blue and black. In the country it is grey and pink or cerise, grey and blue, and maize-colour and mauve. In these latter costumes the upper jupe will be looped up at times with silk bands of the same colour as the lower jupe, and starting from the waist, where the ends are concealed by a sash or belt. In a toilette of this description the under jupe was cerise, with two narrow grey bands, bound with black, running round it a few inches from the bottom, which is bordered with a thin black cord. The upper jupe of pale bluish grey had a ruche at the lower part, bound above and below with cerise, edged with black, and was raised all round in regular festoons by bands of cerise ribbon, with a similar edging to them, and with small cerise and black rosettes running up them at regular intervals. A similar ruche formed the collar to the corsage, and epaulettes and cuffs to the sleeves. With this costume grey gloves and boots, sewn with cerise silk, were worn.

At the seaside many ladies wear unbleached holland robes, embroidered with scarlet or black braid, with loose, square-cut jackets and double skirts, the under jupe short, to show tall, yellow boots, stitched with black or scarlet, and scarlet silk stockings. The hat, if of light-coloured straw, is ordinarily trimmed with poppies and other wild flowers; if of black straw, with a wreath of buttercups; if of velvet, with a scarlet or yellow feather, and with a black or yellow lace veil.

THE ILLUSTRATIONS.

Fig. 1. *Walking Dress à Deux Jupes*, in alpaca of some light neutral tint, the under jupe bordered with two narrow bands of mauve or rose-colour taffeta. The upper jupe, which is looped up very high behind, is trimmed round the bottom with a series of ornaments in taffeta, strung, as it were, upon a band, and diminishing in size as they approach the waist. A similar trimming ornaments the short mantle paletot round the bottom, at the collar, the shoulders and the cuffs, and the lappets of the long sash. The white hat is bordered with velvet, and a palm sprig of the same colour as the trimming of the dress. The boots are light-grey, the tops turned over *au col mousquetaire*, and faced with mauve or rose-colour.

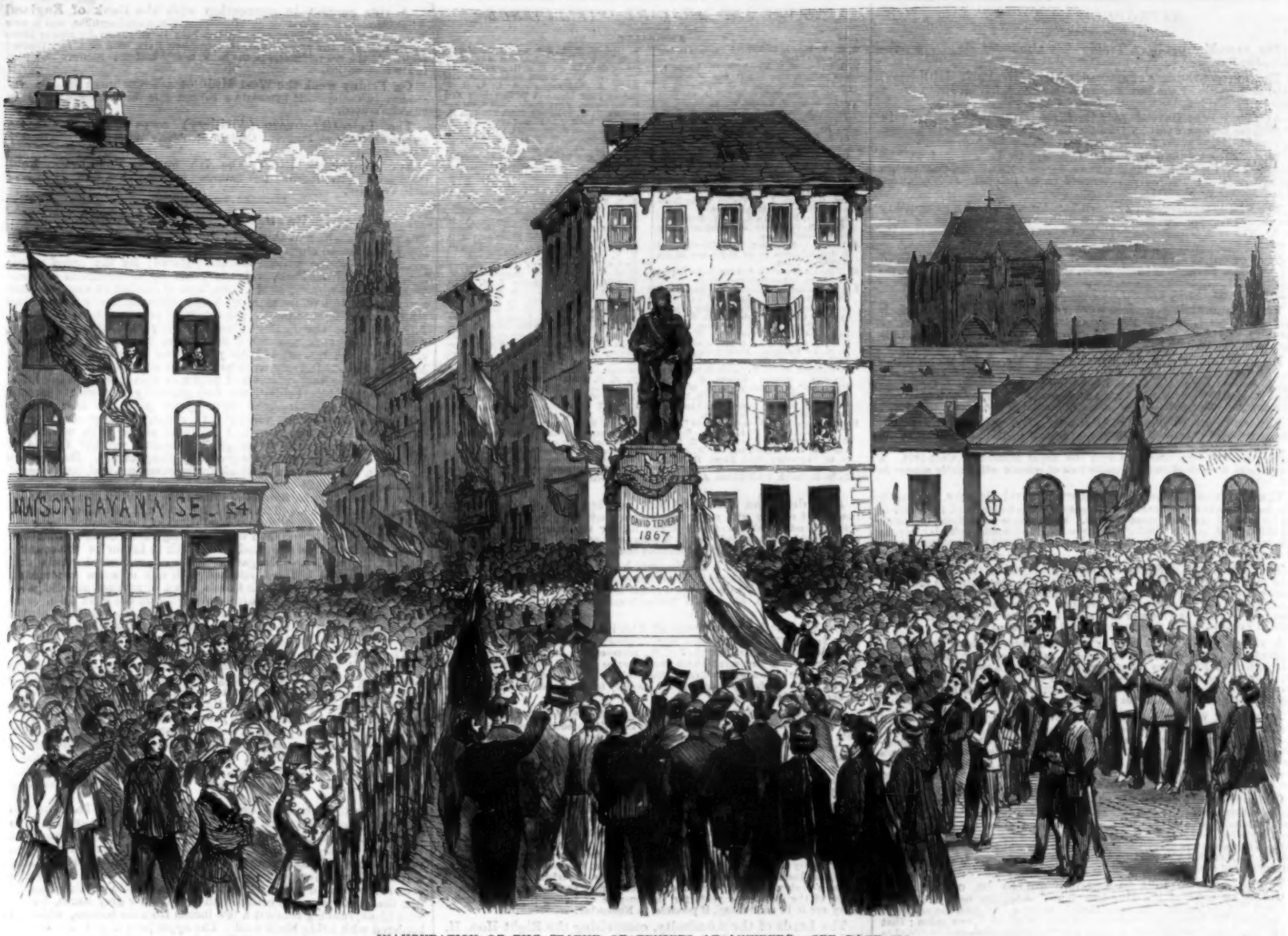
Fig. 2. *Robe à Queue*, of maize-coloured taffeta, or of fine white mohair, over a lemon-coloured jupon, the skirt shaped at the bottom and up the sides into teeth, which are bound with gold-coloured ribbon, and edged with white guipure. The loose jacket, which is open at the sides and front, is similarly shaped at the edges, and trimmed to correspond. The hat is of rice straw, with a large white veil falling behind, and a bouquet of buttercups in front.

Fig. 3. *Robe à Deux Jupes.*—The upper one, which has the corsage attached to it, is of black silk, and is made to wrap over and fasten on the right side, which is ornamented all down with narrow bands of green passementerie, having buttons at each end. The jupe is bordered round with a double band of narrow green silk, between which is a row of buttons. Similar buttons run down the point of the corsage. The under jupe is of green taffeta, with a border round the bottom of a deeper shade. A Marie Antoinette fichu, also of green taffeta, is crossed over the breast and tied in a large bow behind, the long wide ends falling down the skirt of the robe. The hat is of tulle and black lace, trimmed with a wreath of green leaves, and with a small lace veil falling over the chignon.

Fig. 4. *Toilette de Visite* in pearl-grey taffeta, the long under jupe being trimmed at the lower part with five rows of blue ribbon. The upper jupe is caught up on the left side by a band of ribbon falling from the waist. The high, tight-fitting corsage has loose sleeves, caught up in somewhat similar fashion by a band which hangs from the shoulder. The chapeau, of puffed tulle, is trimmed with a small white ostrich-feather and a blue flower. Blue kid boots are worn with this toilet.

In reference to the report prepared by Mr. H. Goschen for the Committee of Council of Education, upon the Harness and Saddlery (class 62) in the Paris Exhibition, which was published in our last, Mr. S. Blackwell, of 239, Oxford-street, desires us to correct an error as to a matter of fact. His apparatus for fomenting applications is not made of gutta-percha, as stated by Mr. Goschen, but of vulcanised indiarubber, and may therefore not be liable to be injured by a hot climate.

The congress of the Social Science Association will be held at Belfast on Sept. 18. Lord Dufferin will preside and deliver the inaugural address. The jurisprudence department will have Mr. Justice O'Hagan at its head, with the Irish Master of the Rolls over the repression of crime section. Dr. Andrews, F.R.S., vice-president of the Queen's College, Belfast, will preside over the education department; Sir James Simpson, Bart., M.D., of Edinburgh, over that of health; and Sir Robert Kane, F.R.S., of Dublin, over that of economy and trade; with Mr. William Mulholland, of Belfast, as chairman of the trade section. The Queen's College has been placed at the service of the association, and the departmental meetings will be held in the various rooms. Arrangements are in progress for the holding of soirees and excursions to places of interest in the neighbourhood.



INAUGURATION OF THE STATUE OF TENIERS AT ANTWERP.—SEE PAGE 231.

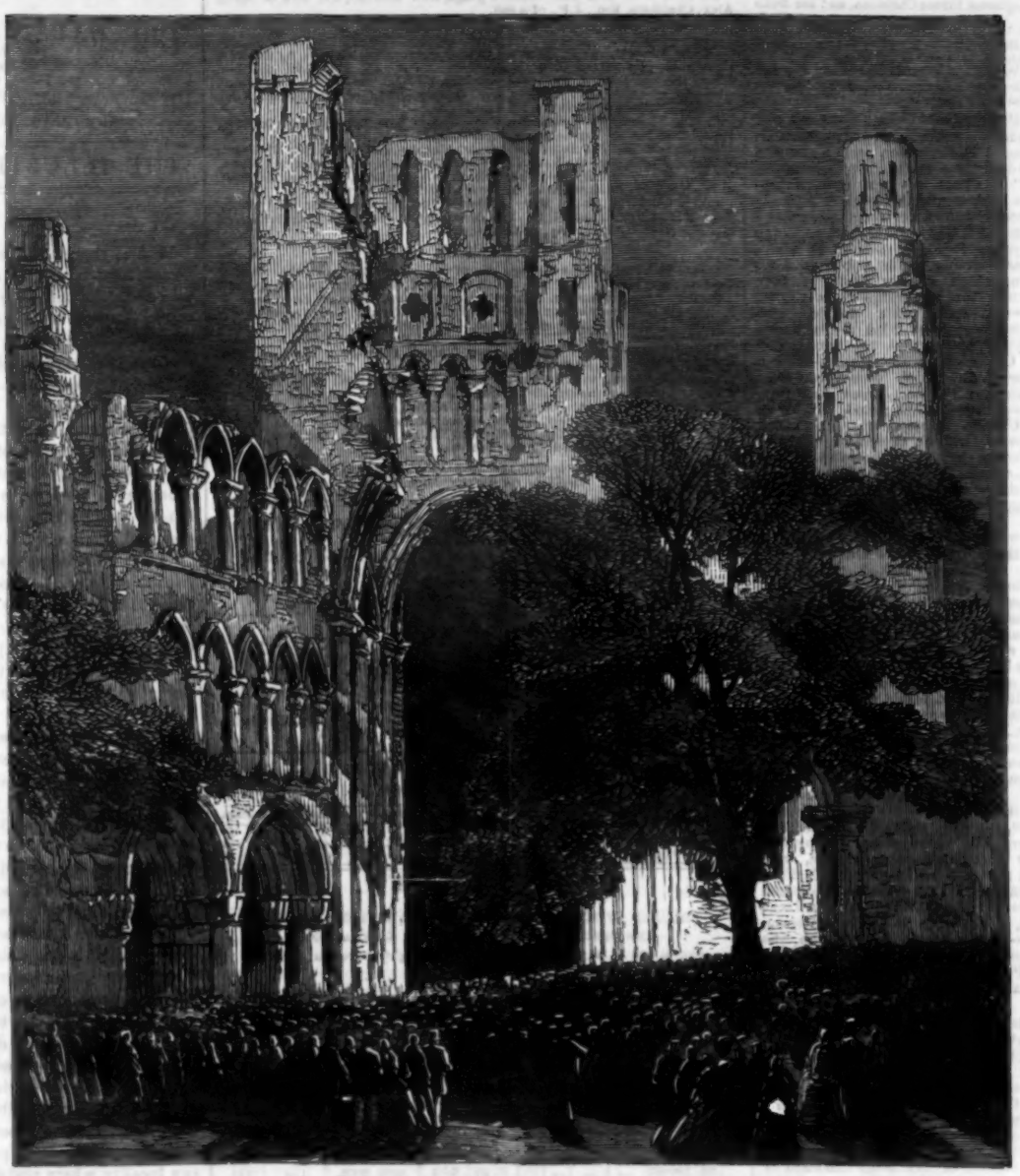
PARIS FASHIONS FOR SEPTEMBER.—SEE PRECEDING PAGE.

THE QUEEN'S VISIT TO THE SCOTTISH BORDER.

THE visit of her Majesty to the Duke and Duchess of Roxburghe, at Floors Castle, Kelso, on her way from Windsor to Balmoral, occupied three days of last week, the Queen having arrived there between eleven and twelve on the Wednesday morning, and departing half an hour before midnight on Friday night. We gave a description of Kelso and Floors Castle on a former occasion, when the Prince and Princess of Wales went there in the autumn of 1865, and some views both of the town and the ducal mansion (properly named the Palais de Fleurs, or Flowers Castle), most pleasantly situated on the banks of the Tweed, were then engraved for this Journal.

Her Majesty, with Princess Louisa, Prince Leopold, and Princess Beatrice, joined by Prince and Princess Christian of Schleswig-Holstein, with their infant son, Prince Christian Victor, having started from Windsor by special train at half-past ten on Tuesday evening, breakfasted next morning at Carlisle, in the County Hotel, where they stayed an hour, and then proceeded, by the North British Railway, to Kelso, the chairman of that railway company, Mr. Stirling, and several of the directors, going with the special train. The saloon carriage provided for the Queen being found too wide to pass through some of the bridges on this line, a smaller saloon carriage, borrowed from the North-Western Railway Company, was substituted for it at Carlisle. The train passed Hawick at half-past ten, slackening its pace for a mile or two, to allow the Queen to receive the hearty greetings of the people assembled there. The Duke of Marlborough, Lord President of the Council, accompanied the Queen as the Cabinet Minister who will attend her Majesty during the first week or two of her sojourn in Scotland.

At Kelso, of course, great preparations had been made. A procession was formed, at eight o'clock, in Shedden Park, the pleasure-ground which Mrs. Robertson, of Ednam, has given to the town. The magistrates of Kelso and its neighbourhood, the clergy, the reception committee, the Freemasons and Oddfellows, the volunteers, and a party of unofficial gentlemen, with four or five bands of music, composed this procession, which marched through the Wood-market, Bowmont-street, and Roxburgh-street, to the Market-square. Along Bridge-street, from Market-square to Kelso Bridge, which was the road by which the Queen was to enter the town from the railway station, the houses were decorated with flags, evergreens, and flowers; the pavement was thronged with an eager and joyful multitude; and the windows, and even the housetops, were occupied by hundreds of spectators. The special train bringing the Royal party arrived at the Kelso station at a quarter past eleven. The Northumberland Artillery Volunteers fired a salute with their 6-pounders at Roxburghe Castle. The Queen and her children, on alighting, were received on the platform by the Duke and Duchess of Roxburghe, with their eldest son, the Marquis of Bowmont; the Duke of Buccleuch, Lord Lieutenant of the county; Lord and Lady Charles Innes Ker; Mr. Rutherford, the Sheriff; Mr. F. Russell, the Sheriff-Substitute, and other county officials. Major-General Hamilton, commanding the forces in North-Britain, was present, with Captain Graham, Aide-de-Camp; also Colonel Roche, Inspector of Volunteers, with Captain Northcote, Aide-de-Camp. Sir George Douglas, commanding the local administrative battalion of volunteers, was at the station, with the Roxburghshire and Selkirkshire battalion; and Captain Boycott was in command of the escort of the 14th Hussars. The band of the Peebles volunteers struck up the National Anthem when the Queen stepped out of the railway train, and loud cheers broke from the assembled spectators. A landing-stage and pavilion had been erected for the occasion. It was finely carpeted and decorated, being covered with white and red calico, with rows of supporting columns on each side of the interior similarly covered and wreathed with laurel and heather, the spaces behind and between the columns being occupied with flowers. The front of the pavilion — towards the road — was draped with Victoria tartan; while at the top, at each end, was the Royal crown, the station lamps also being painted with the Royal arms. Passing through this pavilion, the Queen and the Royal visitors proceeded to the carriages, which were awaiting them at the station; and here the party took up their places in the following order, the Duke of Buccleuch being on horseback, and her Majesty preceded by the Sheriffs in a carriage:—



KELSO ABBEY ILLUMINATED BY THE LIME-LIGHT.

THE QUEEN CROSSING KELSO BRIDGE.

1. The Queen's carriage, with her Majesty's horses, containing the Queen, her Royal Highness Princess Christian, her Royal Highness Princess Louisa, and the Duchess of Roxburghe.
2. Barouche, containing her Royal Highness Princess Beatrice, his Royal Highness Prince Leopold, his Royal Highness Prince Christian, and the Duke of Roxburghe.
3. Landau, containing Lady Churchill; her Majesty's Minister, Lord Charles Fitzroy; and the Marquis of Bowmont.
4. Chariot, containing Prince Christian Victor and two nurses.
5. Coach, containing the Hon. Miss Phipps, Miss Bauer, and Mdlle. Norelle.
6. Waggonette, containing Sir Thomas Biddulph, Colonel Gordon, Dr. Jenner, Mr. Duckworth, and Lord Charles Innes Ker.

The carriages proceeded, at a walking pace, through the hamlet of Maxwellheugh to Kelso Bridge, where a magnificent triumphal arch had been erected, composed of laurel and heather, with a star and floral crown on the north side, and on the south the words, wrought in flowers, "God Save the Queen." The road was kept by the volunteers. Near the north end of the bridge, within the glebe grounds adjacent to the abbey, a platform, covered and decorated with coloured calico, flowers, evergreens, and bannerets, had been built close to the public road. Here about fifty young ladies, all attired in white, had taken up their position, each having a little basket filled with flowers, which, at the approach of her Majesty, they strewed in the way. From this point up Bridge-street to the market square the streets were lined with people, who waved hats, and caps, and handkerchiefs, and filled the air with their hearty cheers as her Majesty approached, the bands still playing the National Anthem. On reaching the Market-place a halt was made at the platform, on which were Mr. Geo. Craig, senior magistrate of Kelso; with Mr. James Johnston, junior magistrate; Mr. Hutchinson, town clerk; and Mr. Wm. Robson, procurator-fiscal; Mr. Charles Robson, of Craigboyle; Provost Deans, of Jedburgh; Provost Dalglish, of Selkirk; Provost Paterson, of Peebles; Major Purves, of Berwick; and Sheriff Douglas; besides the Misses Okell, cousins to the Duke of Roxburghe, with Miss Tait, a little girl, aged six years, daughter of the Baron Bailie, Mr. James Tait, of Lanrigg, who, it was arranged, should present a bouquet to her Majesty. She was dressed in white muslin, trimmed with white satin, and wore a white cape with a white bonnet, the latter a present from the Duchess of Roxburghe. Her Majesty, who was attired in mourning, looked remarkably well, and acknowledged with looks of manifest pleasure and gratification the loyal acclamations with which she was greeted. On the Queen's approach, the magistrates of the town advanced to the front of the platform, when the senior magistrate handed to her an address of welcome, reminding her of the interesting literary and historical associations belonging to Kelso, as the birthplace of the poet Thomson and near the residence of Sir Walter Scott; but assuring her that this Royal visit would ever be remembered as one of the happiest events in its annals. The Queen graciously accepted the address from Mr. Craig and the bouquet from little Miss Tait. The carriages then drove off towards Floors Castle, entering by the top of Roxburghe-street, near which a Royal arch, similar to the one on Kelso Bridge, had been erected, bearing the words, "Welcome to Tweedside." Two platforms had been erected in Roxburghe-street, occupied by the children of the Ragged School and the Roxburghe School; and, on each side of the entrance to the castle, platforms were erected, where about 260 persons were assembled, consisting of the workpeople on the estate, with their wives. A Royal salute from the guns at Roxburghe Castle—fired when the Royal standard was hoisted at Floors—announced the arrival of her Majesty about noon. Immediately after a large company met in the Townhall, when the senior magistrate, Mr. Craig, proposed "The Queen—Long life to her," which was pledged in flowing bumpers of champagne. This was followed by the toasts of "The Prince and Princess of Wales and the other Members of the Royal Family" and "The Duke and Duchess of Roxburghe."

In the evening the town was brilliantly illuminated. The chief point of the display was the Market-square. The Townhouse, the banks, and the principal shops in the square were all lit up. The Townhouse was illuminated with padella lights; many devices in gas jets had been constructed; numerous transparencies were also to be seen in the Market-square, and throughout the streets; and there were very few houses in the leading thoroughfares in which there was not some attempt at illumination. The ancient abbey was lit up with the lime light, and the bridge towards Floors was outlined with padella lights. An immense number of spectators remained in the town from the morning to witness the illuminations, and the evening trains brought more crowds who had not been able to be present at the earlier proceedings. But the grandest part of the festive display that night was the kindling of all the beacons in Upper Teviotdale. This was a scene which had not been witnessed upon the Scottish hills since the alarm of the French invasion, sixty-three years ago. The local landowners and others had taken care to make the piles ready for the signal to light them up. This was to be given by a shower of rockets from Floors Castle, and the cue was taken by Upper Teviotdale from the Eildons. Shortly after nine o'clock all were in a blaze. The summit of the Minto hills wore the fiery trophy. On the Verticle hill, the highest point of the burgh lands, the flames bore testimony to the loyalty of the corporation and people of Hawick. At a short distance from thence, on Crumhaugh Hill, the Duke of Buccleuch had restored the original beacon proclaiming to the county not that an invader had set foot on our shores, but that Queen Victoria's home was that night in Roxburghshire. On Stobs Hill and Penchristpen Sir William Elliot added to the illumination, which was continued by Caldcleugh to the Liddesdale border; and beside this, on Greatmore Fell, near where Queen Mary sunk in a bog, known to this day as the Queen's Mire, there blazed a companion fire in honour of another and a happier Queen. The beacon on Kirkhill lighted up the village of Newcastleton; that on Pinnis sent its rays down on Canonbie and Liddesdale; and the summit of Cardy Hill, all aglow, told the people of Cumberland and the sailors far away on the Solway's waves that Queen Victoria had crossed the border at its base that day. Other proprietors in Upper Teviotdale made similar demonstrations of loyalty—as Provost Wilson, on Heronhill, and Mr. Chisholme, at Stirches. The fires burned during most of the night, and in some of them the flames were only paled by the rising of the orb of day. The general effect was remarkably fine, and viewed by immense numbers of spectators all over the district.

The Queen and her party visited Melrose and Abbotsford on the Thursday afternoon, and Jedburgh on the Friday, before their departure from Kelso. A few Illustrations of the reception they met with at those places will appear in our next publication.

An inquest on the body of Maria Thomas, discovered at the bottom of an old coal-shaft at Rhymney, has resulted in a verdict of wilful murder against William Prothero, a young man who kept company with her.

On Saturday evening, as two gentlemen of Queenstown, named Scott and Bailey, were sailing in the harbour, the boat was caught in a squall and upset. Both were drowned.

The grand jury of the Central Criminal Court have complained to the Court of the number of cases unnecessarily submitted to them, where the evidence before the police magistrates was so clear that the prisoners might have been at once sent up for trial. They had nearly 200 indictments to deal with at the late sessions. The grand jury at the Liverpool assizes made a similar presentment, remarking that many of the cases were such as ought to have been tried at the sessions. A special jury at Leeds complained likewise.

A wedding incident of a novel character is reported by an Irish paper. A person over sixty years of age, having appeared at church in an Ulster town with his intended bride, a girl of twenty, she being a Roman Catholic and he a Protestant, a brother-in-law of the bridegroom (whose third wife the girl was to be) was determined, even by force, to prevent the marriage from taking place. It was intended to have had the ceremony "as private as possible," but a crowd of five hundred assembled round the door to hoot the pair as they entered the building. Within the church itself blows were exchanged across one of the pews between the bridegroom and his indignant former relative, and a wound on one of the eyes of the latter was the result. The clergyman was for some time unable to officiate, and when at last the knot was tied, and the couple reappeared at the back door of the church, there was a crowd there also to yell at them. Finally they were delivered from the mob, and brought to their residence by an escort of police.

BIRTHS.

On the 19th inst., at Karlshof, near Darmstadt, the wife of Dr. Merosr, of a son.

On June 8, at Moa Flat Station, Otago, New Zealand, the wife of Gerit Alex. Chalmers, Esq., J.P., of a son.

MARRIAGES.

On the 7th inst., at St. Peter's Church, Sherbrooke, Canada, by the Rev. C. P. Reid, M.A., Incumbent, assisted by the Rev. H. C. Parkin, the Rev. James Boydell, B.A., of Parkgate, Cheshire, England, to Louisa Ada, second daughter of Charles W. Witcher, Esq., Deputy Sheriff of the district of St. Francis, Province of Quebec. No cards.

On the 13th ult., at Valparaiso, Chili, James Law Bennett, Esq., to Rosa, second daughter of Bartholomew G. Browne, Esq.

On the 15th inst., at Holton Beckering, Lincolnshire, by the Rev. H. Frank Hodgson, Rector, and the Rev. Charles Nevile, Rector of Fledborough, Notts, the Rev. Henry Nevile, Rector of Wickenby, to Charlotte, youngest daughter of the late Rev. Edward Hodgson, Vicar of Rickmansworth.

On the 22nd inst., at St. Mary Abbott's, Kensington, Luther M. Shreve, Esq., of St. Louis, Missouri, U.S., to Julia Piggott, youngest daughter of the late Robert Oldershaw, Esq., of Islington.

DEATHS.

On the 25th inst., at the Grange, Swaffham, Norfolk, Janet, the relict of the Hon. and Rev. A. A. Turnour, late Rector of Tatterford, Norfolk, aged 73.

On Jan. 9 last, at Burton, Adams County, Illinois, Frances Lucy, wife of Mr. Albert H. Richards, late of Salmon Falls, California, aged 33 years.

On the 27th inst., after many years of suffering, Sarah Elizabeth, the beloved daughter of Frank Farnan, Esq., of Old Ford, Middlesex.

On the 26th inst., at Hilldrop Cottage, Tufnell Park West, Maria, wife of William Fergusen, aged thirty-seven.

On the 26th inst., at Richmond, Surrey, Robert Bidwell Edwardes, Esq., K.H., late Major in the 3rd Light Dragoons.

On July 12, at Poona, Bombay, Robert Napier, infant son of Brigadier-General Sir Charles Staveley, K.C.B., aged eight months.

On the 9th inst., at Dominica, West Indies, Charles Leathem, Esq., formerly of Belfast, Ireland, in the 65th year of his age.

*** *The charge for the insertion of Births, Marriages, and Deaths, is Five Shillings for each announcement.*

CALENDAR FOR THE WEEK ENDING SEPTEMBER 7.

SUNDAY, Sept. 1.—Eleventh Sunday after Trinity. St. Giles, or Aigidius, abbot and confessor, died 725. Death of Sir Richard Steele, essayist, 1729.

MONDAY, 2.—Battle of Actium (defeat and ruin of Mark Antony by Octavius Cæsar), B.C. 31. Recovery of the lost Atlantic cable of 1865, 1866.

TUESDAY, 3.—Death of Sir Edward Coke, Lord Chief Justice, 1634; and of Oliver Cromwell, Lord Protector, 1658.

WEDNESDAY, 4.—Death of Charles Townshend, orator and statesman, 1767. Death of John Home, author of "Douglas," 1808.

THURSDAY, 5.—Old Bartholomew's Day. Malta captured by General Pigot, 1800. Moon's first quarter, 11h. 31m. p.m.

FRIDAY, 6.—Height of the Great Plague of London (weekly mortality, 10,000), 1665. Commencement of Garrick's Shakspeare Jubilee, 1769.

SATURDAY, 7.—Enurchus, Bishop of Orleans. Birth of Queen Elizabeth, 1533; and of Samuel Johnson, the lexicographer, 1709.

TIMES OF HIGH WATER AT LONDON BRIDGE

FOR THE WEEK ENDING SEPTEMBER 7.

Sunday.		Monday.		Tuesday.		Wednesday.		Thursday.		Friday.		Saturday.	
M h m	A h m	M h m	A h m	M h m	A h m	M h m	A h m	M h m	A h m	M h m	A h m	M h m	A h m
3 43	4 1	4 25	4 41	5 0	5 19	5 37	5 56	6 17	6 36	6 56	7 15	7 34	7 53

THE WEATHER.

RESULTS OF METEOROLOGICAL OBSERVATIONS AT THE KEW OBSERVATORY OF THE BRITISH ASSOCIATION.

Lat. 51° 29′ 6″ N.; Long. 0° 18′ 47″ W.; Height above Sea, 34 feet.

DAY.	DAILY MEANS OF Barometer Corrected.	Temperature of the Air.	Dew Point.	Relative Humidity.	Amount of Cloud.	THERMOMETER Minimum read at 10 A.M.	Maximum read at 10 P.M.	WIND. General Direction.	Movement in Miles, from 10 A.M. to 10 P.M. preceding.	Rain in 24 hours, read at 10 A.M. this morning.
	Inches.	°	°		0-10	°	°		Miles.	In.
21	30·004	61·8	52·9	·72	7	53·8	70·7	W.	103	·000
22	30·020	63·2	51·7	·78	1	49·3	73·1	W. S. SW.	84	·003
23	30·031	66·2	53·2	·65	2	48·0	74·9	SSW. W.	106	·000
24	30·062	65·8	59·8	·82	4	49·7	74·9	SSW. SW.	193	·000
25	..	..	..	..	..	55·5	75·0	..	190	·000
26	29·965	..	..	..	10	57·0	69·3	SSW. NNE.	113	·145
27	30·042	59·3	46·8	·65	5	49·0	68·3	SW. W.	167	·000

The following are the readings of the meteorological instruments for the above days in order, at half-past nine a.m.:—

Barometer (in inches) corrected	30·067	30·040	30·051	30·091	30·027	30·071	30·028
Temperature of Air	64·0°	61·7°	66·2°	66·4°	67·4°	62·2°	59·2°
Temperature of Evaporation	59·7°	57·7°	59·5°	59·6°	62·9°	58·7°	55·1°
Direction of Wind	W.	W.	SSW.	SSW.	S.	SSW.	SW.

THEATRE ROYAL, HAYMARKET.—Mrs. SCOTT SIDDONS, who is engaged for a limited period, will appear on MONDAY, SEPT. 2, and during the Week, in the character of Rosalind, in AS YOU LIKE IT, with the strength of the Haymarket Company. Mr. Buckstone very Evening in "TO PARIS AND BACK FOR £5. Concluding with PETER SMINK. Shortly, ROMEO AND JULIET—Juliet, Mrs. Scott Siddons.

ROYAL PRINCESS'S THEATRE.—Sole Lessee and Manager, Mr. VINING. On MONDAY, SEPT. 2, and during the Week, POOR PILLICODDY. After which, at Eight o'Clock, THE STREETS OF LONDON.
N.B. On SATURDAY, SEPT. 14, Mr. and Mrs. DION BOUCICAULT will make their reappearance.

ROYAL AMPHITHEATRE and CIRCUS, High Holborn. Brilliant and unabated Success.—Great hit of the New Pantomime Mimique, HARLEQUIN SINGE, by Mons. Montero and Company; roars of laughter nightly greet the Eccentric Abbott's "Vanishing Act;" the Brothers Daniels in their Inimitable Violin Performances repeatedly encored; Alfred's thrilling Aerial Act; SCENES in the ARENA by the Matchless Troupe of Equestrians; Gerard's Great Tunnel Leap; Mdlle. Lambert's Wonders of the Haute Ecole; the Powell Family; Mdme. Gerard in her Daring Balloon Flight; the Marvellous Kings of the Carpet; Fillis's Fire Horse, &c. Commence at Eight. Grand MORNING PERFORMANCE EVERY SATURDAY at 2.30. Carriages may be ordered for a Quarter to Five. Box-office open from Ten till Five.

NEW SURREY THEATRE (Lessees, Messrs. Shepherd and Creswick) will OPEN for the SEASON SATURDAY, SEPT. 14, with an Original Romantic Drama, by Watts Phillips, Esq., written expressly for this Theatre, and to develop its extraordinary resources, entitled NOBODY'S CHILD, supported by Mr. Creswick and a most powerful company; the grand and stupendous scenery by Mr. William Calcott, Mr. Albert Calcott, and assistants. The new and original Music by J. W. Collins. With, for the first time, an original Farce, by Thomas J. Williams, Esq., A CURE FOR THE FIDGETS.

ST. JAMES'S HALL, PICCADILLY.
CHRISTY MINSTRELS.
EVERY EVENING AT EIGHT.
WEDNESDAYS AND SATURDAYS THREE AND EIGHT.
The Company is now increased to
THIRTY-ONE PERFORMERS,
each of acknowledged eminence, rendering this Troupe the
LARGEST AND BEST IN THE WORLD,
and the only one acknowledged by the Press or countenanced by the Public.
New and luxurious Fauteuils, 3s.; Sofa Stalls and Chairs, 2s.; Area Raised Seats, 1s.; Gallery, 1s. Tickets and places may be secured at Mr. Mitchell's Royal Library, and at Mr. Austin's Office, 28, Piccadilly. Manager, Mr. FREDERICK BURGESS.

WHO IS IT LYING BENEATH THE BROAD PALM? and THE MOON IS MY FRIEND, two entirely new and original Songs, the words written by Alfred Crowquill, the music composed by Herr MEYER LUTZ, EXPRESSLY FOR THE CHRISTY MINSTRELS, have proved a complete success. The words and music have been generally pronounced the most charming and original heard for many years.—ST. JAMES'S HALL, Piccadilly. Sung at every Performance.

CRYSTAL PALACE.—SEPTEMBER — EXCURSION MONTH.—For Terms for Large Parties apply to the Secretary.
Excursions of Firms and Schools daily. Palace and grounds in great beauty.
Monday to Saturday, One Shilling.
Tuesday—Great Temperance Fête. Saturday—Concert by Metropolitan School Choral Society. Admission, One Shilling; Guinea Season Ticket free.
In September heads of firms, &c., may obtain tickets for admission on Saturdays at One Shilling on previous application to the Secretary.

CRYSTAL PALACE.—The "Nonpareil" LIFE-RAFT on View Daily. This raft, which made the most extraordinary voyage on record from New York to Cowes, in 43 days, has excited immense interest. Captain Mikes and his two men in attendance to give detailed particulars.

LECTURES on MINERALOGY and GEOLOGY, at KING'S COLLEGE, LONDON, are given on WEDNESDAY and FRIDAY MORNINGS, from Nine to Two, by Professor TENNANT, F.G.S. These on Mineralogy begin Friday, Oct. 4, and terminate at Christmas; fee, £3 3s. Those on Geology commence in January and continue till June. A shorter Course of Lectures on Mineralogy and Geology is delivered on Tuesday Evenings, from Eight till Nine. These begin Oct. 15 and terminate at Easter; fee, £1 11s. 6d. Professor Tennant accompanies his Students to the Public Museums and to places of geological interest in the country.
R. W. JELF, D.D., Principal.

MR. WILLIAM LLOYD GARRISON will speak at the CRYSTAL PALACE FETE of the NATIONAL TEMPERANCE LEAGUE, on TUESDAY, SEPT. 3.

Now ready.
THE ILLUSTRATED PENNY ALMANACK for 1868, containing
Numerous Engravings selected from the ILLUSTRATED LONDON NEWS; Tables of Stamps, Taxes, and Licenses; Eclipses, Remarkable Events, Postage Regulations, and a great variety of Useful and Interesting Information. The trade supplied by W. M. CLARKE and Co., Warwick-lane, Paternoster-row; and G. Vickers, Angel-court (172), Strand, London.

THE ILLUSTRATED LONDON NEWS.

LONDON: SATURDAY, AUGUST 31, 1867.

THE first report of the Commission on Ritualism has been issued, and it will, of course, command the best attention of all parties in the religious world, and of large numbers who would not care to be included in that curious designation, but who take, nevertheless, a deep and fitting interest in the most important of all subjects.

This document consists of four paragraphs, and a sort of preface, and sequel. In the first of the four divisions the Commissioners state that their earliest consideration was given to the question of vestments. They say that some witnesses regard these garments as symbolical of doctrine, and others as a distinctive vesture whereby they desire to do honour to the Eucharist; but that none look upon them as essential, while they give grave offence to many. The opinion of the Commissioners is that it is "expedient" to restrain all variations from the vesture which has been long in use, and that this object may be attained by putting aggrieved parishioners in possession of power to obtain redress; but the Commissioners are not prepared as yet to recommend the best mode of giving effect to these conclusions, though they have thought it their duty not to delay the announcement of their decision.

Somewhat prematurely, we venture to think, congratulations upon the character of this report have been addressed to the public. We should be rejoiced to be able to discover in it any tendency to promote the peace of the Church by effective treatment of the difficulties referred to. We should have been very glad to find in it any enunciation of principle which, proceeding from a grave body representing the Church of England, would be accepted by sensible men of all opinions as a sort of *locus standi* for the true Churchman. We find nothing of this kind, but we are told that upon the ground of expediency it is desirable to restrain the use of certain garments if aggrieved parishioners desire such restraint. No principle whatever is affirmed, therefore; and if a clergyman can succeed in convincing his flock that the vestments are desirable, or, by his personal influence, can induce them to let him have his own way in regard to ceremonial, while in return he labours so zealously for his parish, we are unable to see that he can be interfered with. Possibly certain organisations might be set on foot in the metropolis or some other centre by means of which an "aggrieved parishioner" might be established in any locality where vestments prevailed, and he might be supported with the funds necessary to carry on the anti-vestment war; but even if this were not supposing an amount of lay zeal and liberality which may not be altogether impossible, the system would devolve upon private and unrecognised persons a duty which ought to be performed by the authorities of the Church or their allies in the State.

We are disinclined to imitate the course to which we have referred, and to express a premature judgment on an important document. But there is one point of view in which it strikes us as noteworthy. The Commission verbally condemns vestments, on the ground of expediency, and therefore we are told that the Ritualists have received a severe rebuke, or what in the older days used to be called a heavy blow and a great discouragement. We shall be curious to know whether they themselves consider this to be the case. Apart from the Englishman's valuable negative faculty of never being able to know that he is beaten, there seem to us some grounds why the ceremonialists in the Church should feel, if they judge it wise to refrain from expressing, gratitude to the friends who have fought for Ritualism, and brought the investigation to the present result. Whoever managed to get that word "expedient" into the report did a good thing for the Ritualistic party; for, whether an Englishman belongs to the so-called religious world or not, he has an utter objection to having religious matters treated on the principle we apply to a franchise or a tax. If it is only expedient to restrain the use of vestments in existing circumstances, other circumstances may render it expedient to relax that restraint. In the next place, as we have already said, the vestment is to be discontinued, not because elaborate Church millinery is held to be inconsistent with the simple worship of the Church of England and the manly and straightforward language of her articles, but because, in a given parish, certain persons object to the variegated raiment. In some parishes many persons object to a sermon at all, and think the service sufficiently long; while others have no objection to the sermon, but only dislike the preacher, and complain that a youth of four-and-twenty is set up to instruct men of thrice his age and ten times his knowledge. In many parishes the music is a grievance; and while some parishioners like to hear the clowns and the charity children lifting the rude hymn, others desire the trained chorister; and others, again, would have no objection to engage the voices of professional singers. In many parishes people like the old pew system, the certainty of worshipping in the old corner where they have sat for years, and the curtains that exclude all disturbing objects of sight, while their antagonists would sweep away pew and bench and have chairs and the first-come-first-seated arrangement of the

Catholic churches. If questions of Church ceremony are to be referred to the aggrieved parishioners, we shall soon have plenty of that sort of thing. We regret to say that we see in this report two things. The Ritualists have clearly won a victory which may be temporary, but which will be valuable. They have many months of impunity before them, and they will be able to declare, as they will doubtless do in many a church to-morrow, that the question has been sought to be settled, not on Church principles, but as a matter of Church policy.

They have all the advantages which time, and zeal, and energy can give them for the next half year or more; and we still more deeply regret to observe that the tendency of the report is to approve the avoidance of hierarchical responsibility. The duty of regulating Church matters belongs to the Bishops who are selected from the judicial class and raised to complete independencies that they may be the "overlookers" of the vineyard. It is for the Bishop to know how services are performed in the parishes of his diocese; and it is for him to correct, to "restrain," to censure—or, what is a Bishop? In this vestment case the Bishops are not to act; the Church correction is to be performed at the instance of aggrieved laymen. We hope that when the Commissioners shall be in a position to advise on the steps to be taken, they will reconsider their language, and be good enough to recollect that the Church of England is an Episcopal Church, a fact which appears to have escaped them. However, we have to hear a good deal more from them on the subject of the other innovations which are complained of, and we accept for the present this sop which has been thrown to public curiosity, only remarking that the morsel has something in common with the sop of classical fiction, and is clearly designed to have a lulling effect upon society. But the dose is not strong enough, and too slight a narcotic engenders increased wakefulness.

THE COURT.

THE Queen, accompanied by the Duke and Duchess of Roxburghe, Prince and Princess Christian, and Princess Louisa, drove from Floors Castle, on Thursday week, to Melrose Abbey. The route lay by Kelso and over Teviot Bridge, and thence, by Maxton and Old and New St. Boswells to Old Melrose, at which place the horses were changed. The journey was afterwards continued up Tweedside, viâ Newstead, to Melrose Abbey. The villages along the line of route were gaily decorated with triumphal arches, evergreens, and banners; and the villagers loyally greeted her Majesty. During the progress to the abbey the Royal party passed through the Priory, the residence of Mr. Erskine, Baron Bailie of Melrose. Mr. and Mrs. Erskine were presented to the Queen by the Duke of Buccleuch, and Mrs. Erskine had the honour of offering a beautiful bouquet, which her Majesty accepted with a cordial expression of thanks. From the Priory a carpet was laid across the Old Brewery-road, and the Queen entered the abbey by the Almsgate. The Duke of Buccleuch, who is proprietor of the venerable ruin, and in whose hands it is admirably kept, had the honour of conducting her Majesty over the interesting structure. At the conclusion of her visit the Queen left the abbey by the chief portal, and proceeded by Abbey-gate into Abbey-street, where the carriages were in waiting. The Royal carriage was escorted by a body of hussars, and the Melrose company of the Roxburghshire Volunteers, commanded by Sir George Douglas, formed a guard of honour, the streets being lined by the first and second (Galashiels) companies of the Selkirkshire Volunteers, under Captains Cochrane and Plummer. The Queen, throughout her progress, was received with the utmost enthusiasm by the large concourse of people assembled. Her Majesty drove from Melrose to Abbotsford, and honoured Mr. and Lady Victoria Hope Scott with a visit. The Queen inspected the various objects of interest contained in the mansion, and her Majesty was pleased to accept a magnificent album containing photographs of Abbotsford. After partaking of tea the Royal party returned to Floors Castle, arriving at nine o'clock. Prince Leopold and Princess Beatrice visited Kelso Abbey. The Duke of Buccleuch had the honour of being invited to dine with the Queen. In the evening a ball was given at the castle.

Yesterday week the Queen, accompanied by the Duke and Duchess of Roxburghe, Prince and Princess Christian, and Princess Louisa, drove to Jedburgh. The route traversed was by Kelso, Maxwellheugh, Heiton Crailing, and Mounteviot, and thence along the bank of the Jed to the city of Jedburgh. The various villages along the line of route were gaily decorated with triumphal arches, and the inhabitants generally gave the Queen a truly loyal welcome. The city was tastefully decorated with arches, floral devices, mottoes, and banners; conspicuous among the latter were a banner said to have been taken from the English by the Jedburgh weavers at Bannockburn, and one believed to have been taken at the battle of Killiecrankie by the Jeddart weavers. A salvo of guns from Bongate Bridge and the castle announced the arrival of the Queen. A platform was erected in front of the County Buildings, alongside which her Majesty's carriage was drawn up. Provost Deans and the various municipal authorities having previously assembled, the Provost presented an address to the Queen, to which her Majesty replied, "I thank you kindly for your hearty reception. You will receive a reply to the address." After the ceremony the Royal party left the city, proceeding, viâ the abbey, towards Fernichirst Castle, and afterwards returned to Hartrigge House at the Wild Cat gate, the residence of Major Gordon. The Major was introduced to the Queen by the Duke of Buccleuch. A bouquet was presented to her Majesty by two of Major Gordon's children, for which the Queen graciously thanked the young ladies. Her Majesty afterwards returned to Floors Castle.

The Queen, accompanied by the members of the Royal family, left Floors Castle at eleven o'clock p.m., en route for Balmoral Castle. The Duke and Duchess of Roxburghe accompanied her Majesty to the Kelso station. An escort was formed by a detachment of the 14th Hussars. The Duke's band was stationed upon the lawn, and the dependants upon the estate were permitted to assemble to witness the departure of the Royal guests. At the moment of departure the hussars, on a call from their commanding officer for "three cheers for our Queen," gave a burst of applause, in which they were vociferously joined by the ducal employés. The band played the National Anthem. A royal salute was fired from Roxburghe Castle. The town of Kelso was illuminated, and the assembled multitude rent the air with cheers. The Queen waved her handkerchief, and in the most gracious manner acknowledged the enthusiastic demonstrations of the people. At the station, the 2nd Roxburgh (Kelso) Volunteers formed a guard of honour, under the command of Major Sir G. Douglas. The Queen, upon her departure, affectionately kissed the Duchess of Roxburghe, and the Duke had the honour of kissing her Majesty's hand. The Queen left Kelso at twenty-two minutes past eleven. Her Majesty travelled in a state saloon by a special train, proceeding viâ Aberdeen and Aboyne to Ballater; arriving at eight o'clock on Saturday morning. The Queen posted thence to Balmoral Castle, arriving at nine o'clock. Later in the day her Majesty, accompanied by Princess Christian and Princess Louisa, drove in the vicinity of the castle. The Duke of Marlborough dined with the Queen.

Monday was the anniversary of the birth of the Prince Consort. The Queen, accompanied by the members of the Royal family, drove in the vicinity of the Royal demesne.

THE PRINCE AND PRINCESS OF WALES.

The Prince and Princess of Wales, with their children, Prince Albert Victor, Prince George, and Princess Louisa of Wales, have arrived at Wiesbaden. The King of the Hellenes has arrived at Wiesbaden on a visit to the Prince and Princess.

His Excellency Count Apponyi, the Austrian Ambassador, has left Belgrave-square for Brighton.

The Duke of Buckingham has left town for Stowe, Bucks.

The Duchess (Dowager) of Norfolk has gone to Dufferin Lodge, Highgate.

The Marquis and Marchioness of Clanricarde left town on Saturday last for Homburg.

The Marquis of Salisbury left town on Saturday last for Lancashire. The Marchioness and family are staying at Hatfield House, Herts.

The Earl and Countess of Strafford have left Cowes for Wrotham Park, near Hadley, Herts.

The Earl and Countess of Rosse and Lord Oxmantown arrived on Saturday last at Birr Castle, Parsonstown, King's County.

The Countess (Dowager) of Morton and Lady Agnes Douglas have arrived at Duddingston-House, near Edinburgh, from London.

Earl Cowper has arrived at his shooting-box in the north of Scotland from Panshanger, Herts.

The Earl of Wilton, accompanied by Mr. and Lady Alice Des Vœux, have sailed from Cowes on a cruise in his Lordship's yacht, for Copenhagen. The Countess of Wilton has left town for Copenhagen.

The Earl of Shaftesbury has left town to join the Countess and family at Tunbridge Wells.

Viscount and Viscountess Cranbourne have gone to the south of France.

Viscount and Viscountess Grey de Wilton left town on Saturday last for Heaton Hall, near Manchester.

Admiral Sir Augustus Clifford has left his official residence at the New Palace, Westminster, for his residence at Ryde, Isle of Wight.

The Right Hon. Sir John Pakington, Bart., M.P., and Lady Pakington have left town for Westwood Park, near Droitwich.

The Chancellor of the Exchequer and Mrs. Disraeli have left Grosvenor-gate for Hughenden Manor.

The Right Hon. Gathorne Hardy has left town for Hemsted, Staplehurst.

The Lord Chief Baron and Lady Kelly have left for Switzerland.

CHURCH AND UNIVERSITIES.

The Convocation of the Province of Canterbury was prorogued on Tuesday, by the Vicar-General of the Archbishop, to Nov. 7.

The subscriptions to the Bishop Cotton Memorial Fund amount now to about £3800. The Indian Government will, it is said, double all subscriptions actually paid by Feb. 1 next.

The Bishop of London has licensed the Venerable Archdeacon Hunter, M.A., late of Rupert's Land, to the incumbency of St. Matthew, Bayswater.

The Bishop of London has instituted the Rev. Richard Whittington, M.A., one of the masters of Merchant Taylors' School (who has been presented by the Corporation) to the rectory of St. Peter's, Cornhill.

The incumbency of St. Mary's Church, Kilburn, has been conferred upon the Rev. Alfred Kennion, M.A., of Trinity College, Cambridge, Curate of Eastington, Gloucestershire.

The incumbency of St. Michael's, Shoreditch, has been conferred upon the Rev. Henry Daniel Nihill, M.A., of Jesus College, Oxford, formerly Curate of St. Alban's Church, Manchester.

On Sunday, at St. Matthew's, Croydon, the Archbishop of Canterbury consecrated the Venerable Archdeacon Kelly Coadjutor Bishop of Newfoundland. His Grace was assisted by the Bishops of Rochester and Gibraltar.

On Monday last a conference of Christian brethren of all churches and all nations, assembled under the auspices of the Holland Evangelical Alliance, was formally opened at Amsterdam by Baron von Wassenaar, who delivered an address of welcome to the visitors. Some leading Protestant divines from France, Germany, Holland, Switzerland, the United States, as well as many well-known clergymen and ministers from Great Britain, attended the conference.

On Sunday, at the dedication festival of the Church of St. Bartholomew, Moor-lane, the curate in charge preached the sermon, which lasted only six minutes. In the evening the service commenced at seven o'clock and finished at a quarter to ten. This was partly accounted for by the length of some of the hymns and the introduction of antiphons, &c. One of the hymns consisted of twenty-six verses. As if to make up for the brief discourse of the morning, the sermon, which was preached by Mr. Lyne, lasted an hour and a half.

The Society for the Propagation of the Gospel in Foreign Parts has agreed to a report, which has received the sanction of the Archbishop of Canterbury, in reference to the forthcoming Anglican Synod at Lambeth. They suggest measures for the hospitable reception of the colonial and American bishops, and that a public meeting be held at St. James's Hall on Friday, Sept. 27. Another proposal is to take advantage of the presence of so many bishops in England to procure sermons to be preached in various cathedrals, and diocesan meetings to be held in aid of the society.

A conference on Sunday Schools has just terminated in the Isle of Wight, at which the Bishop of Oxford presided. He made a speech, in which he said Sunday was as much a day of rest for children as for grown-up persons; and it was a mistaken idea to compel children, whom God had made volatile, and who could not be still for a moment, because it was not their nature, to sit for hours upon hard benches. As to the younger ones, no one who was at all acquainted with children would expect to get any real knowledge into them. A great deal might be done in showing kindness to these little ones, whose parents did not take them to church—at all events, they might be kept away from the Devil's school, where they played at chuck-farthing and made dirt pies. At the Sunday school everything should be done to make the children happy. Of course, there should be some colouring of Christianity and religious teaching about it, but particularly the little things should be taught to sing, for which they were always ready.

The Commission upon the Ritual of the Church of England have agreed upon the following report:—"We, your Majesty's Commissioners, have, in accordance with the terms of your Majesty's Commission, directed our first attention to the question of the vestments worn by the ministers of the said United Church at the time of their ministrations, and especially to those the use of which has been lately introduced into certain churches. We find that, while these vestments are regarded by some witnesses as symbolical of doctrine, and by others as a distinctive vesture whereby they desire to do honour to the holy communion as the highest act of Christian worship, they are by none regarded as essential, and they give grave offence to many. We are of opinion that it is expedient to restrain in the public services of the United Church of England and Ireland all variations in respect of vesture from that which has long been the established usage of the said United Church, and we think that this may be best secured by providing aggrieved parishioners with an easy and effectual process for complaint and redress. We are not yet prepared to recommend to your Majesty the best mode of giving effect to these conclusions, with a view at once to secure the objects proposed and to promote the peace of the Church; but we have thought it our duty, in a matter to which great interest is attached, not to delay the communication to your Majesty of the results at which we have already arrived.—Aug. 19, 1867."

Bishop Twells, the Bishop of Orange Free State, at the Cape of Good Hope, has come to England. The last news from the Cape relates the circumstances which preceded his departure from that colony. The Bishop of Cape Town, styling himself the Metropolitan, having deposed Bishop Colenso, appointed Dr. Twells to act as Bishop of Natal. A rather undignified contest ensued between his friends and those of Dr. Colenso. Dr. Twells was determined to preach in the Pietermaritzburg Cathedral, but Bishop Colenso's churchwardens were resolved that he should not do so. Dr. Twells obtained a Judge's order for access to the cathedral, and on Saturday, June 29, the Sheriff attempted to gain admission; but Dr. Colenso's party barricaded the building, and defeated the Sheriff. On Sunday, June 30, the door of the cathedral was broken open with sledge-hammers, and the Sheriff gained admission, and gave the men who had garrisoned the building into custody. Dr. Twells preached there the same day, both in the morning and afternoon, before the Lieutenant-Governor and Mrs. Keate. Dr. Colenso held a late morning service in the cathedral on the same day. On July 4 Bishop Twells was to hold a confirmation in the cathedral, but a sidesman of the opposite party, on the plea of washing the cathedral, employed a troop of Kaffirs to flood the floor of the building with water, so that Dr. Twells had to adjourn his confirmation to the Church of St. Andrews, where he confirmed seventy young people. In the evening a notice in large type was posted about the town:—"Bishop Twells will preach this evening at St. Peter's Cathedral, on the late deluge," referring to the deluge of water with which he had been defeated.

The following preferments and appointments were announced in Wednesday's *Guardian*:—*Honorary Canonries:* The Rev. H. Carr, Vicar of Dalston and Examining Chaplain to the Bishop of Carlisle, to Carlisle Cathedral; Rev. B. F. Smith, Incumbent of Rusthall and Diocesan Inspector of Schools for the Diocese of Canterbury, to Canterbury Cathedral. *Rectories:* Rev. E. H. Loring to All Saints', with St. Mary's, Gillingham, Norfolk; Rev. C. H. Shaw, Curate, to Hatherop, Fairford; Rev. H. H. Smith to Tansley, near Alfreton, Derbyshire; Rev. O. Smith to Crudwell, Tetbury; Rev. S. Turner to Hempstead, near Gloucester. *Vicarages:* Rev. J. Hamilton to Doulting, Shepton Mallett; Rev. M. H. Lee to Hanmer, Flintshire; Rev. T. Rothwell, Curate of Thurles, to Derrygrath, Lismore. *Incumbencies:* Rev. C. S. Fripp to St. Paul's, Bath; Rev. W. D. Horwood to Aberystwith; Rev. J. R. Jagoe to Meltham Mills, Huddersfield; Rev. J. McCormick to St. Peter's, Deptford; Rev. R. Winterbottom, Curate of Braintree, to Grafton, New South Wales, and Chaplain to the Bishop of Grafton and Armidale. *Chaplaincies:* Rev. H. Reeve to Leeds Borough Gaol; Rev. F. T. W. Wintle, Vicar of Maker, Devon, to the Earl of Mount-Edgcumbe. *Perpetual Curacies:* Rev. A. Kennion to St. Mary's, Kilburn; Rev. J. Paley to Great Longstone, Derbyshire. *Curacies:* Rev. A. J. Bennock to Holy Trinity, Hull; Rev. A. Jackson to St. Mark's, Rosherville; Rev. S. L. Laidman to the Pemberton Colliery Iron School-Church, Lancashire; Rev. H. Layton to St. Thomas's, Birmingham; Rev. G. Ohlson to Holy Trinity Church, Hull.

COUNTRY NEWS.

Two brothers, John and Thomas Trobe, while bathing at South Shields, on Monday night, were swept to sea and drowned.

A deputation from Brighton is to visit the British Association at Dundee, in order to invite that body's attendance there in 1869.

The Welsh National Eisteddfod, or festival and congress of Welsh antiquaries, philologists, poets, and musicians, will be held at Carmarthen next week.

The magistrates of Drogheda have held a meeting to ask the Government for a permanent military force in that town to protect it against another Fenian insurrection.

The honour of knighthood has been conferred on Mr. John Brown, of the Atlas Ironworks, Sheffield, the famous manufacturer of the iron armour-plates for our ships of war.

The boiler of a flaxmill at Randalstown, in the county of Antrim, burst the other day, killing Mr. Barnett, the owner, and five of his men. Four others were seriously injured.

We regret to hear of the appearance of cholera in Belfast. Twelve or fourteen cases have been reported within the last few days, and some of them have proved fatal. The sanitary committee of the town are aroused to action.

The appointment of Mr. Chatterton, late M.P. for Dublin University, to the newly-created vice-chancellorship of Ireland, having caused his seat to be vacant, Mr. R. R. Warren, who has succeeded him as Attorney-General for Ireland, was elected, on Tuesday, without opposition.

Fourteen men and boys were killed, on Tuesday, in the Little Delph Mine at the Garswood Park Colliery, belonging to Messrs. D. Bromilow and Co., at Haydock, near St. Helen's. The colliery is one of the largest in the district, and employs about 800 hands, working five mines by four shafts.

The Manchester and Liverpool Agricultural Society holds its hundredth, or centenary, meeting for the exhibition of live stock, implements of husbandry, and machinery, at Manchester, during the present week. The site of the exhibition is that on which the famed Art-Treasures Exhibition was held, at Old Trafford.

At the end of last week 200 soldiers of various regiments stationed at the Colchester barracks were draughted off to harvest work. Nearly all the steam-threshers have refused to work, and most of the machines are now lying idle. The labourers refuse also to work with the soldiers. There is an abundant crop of wheat and other grain.

A young urchin, fourteen years old, has stolen a horse at Southsea. He was overtaken at Portsdown-hill, where he was resting while the horse grazed. He had two pistols—one loaded—a large quantity of powder, bullets, &c., and a black mask. He said his intention was to have gone to London to imitate the exploits of Jack Sheppard and Dick Turpin.

A number of cattle-dealers have been brought before the Liverpool Bench charged with neglecting to slaughter cattle which had arrived from abroad within the six days prescribed by the Act of Parliament. Nominal fines, however, were imposed, as it was shown that if the cattle had been slaughtered the owners would, in the hot weather, have sustained serious loss.

The conference of masters and workmen in the Barnsley building trade has not resulted in an arrangement of the long-protracted dispute. The offer of the masters was practically an advance of 1s. per week according to the present hours of labour, but the men refuse the offer and declare their determination to hold out until the struggle is brought to a satisfactory close.

At the annual Brewster Sessions, at Sheffield, on Thursday week, an application was made to renew the license of the notorious Broadhead, of the Royal George, Carver-street. Mr. Sugg, his attorney, pleaded his case. The Bench said something was due to moral sentiment, and refused to renew the license. Notice of appeal was given. Broadhead has been a licensed victualler twenty years.

Mr. Pickering, Q.C., and Messrs. Barstow and Chance will commence an inquiry at Manchester, on Wednesday next, into any acts of intimidation, outrage, or wrong alleged to have been promoted, encouraged, or countenanced at by trades unions or associations, whether of workmen or employers, in Manchester and the neighbourhood, and as to the causes of such acts, and the complicity of such trades unions or associations.

Five of the Fenian prisoners in Ireland have been released from Mountjoy Prison, Dublin, and sent to America. All but the most serious offenders and those under sentences are being thus gradually set free on condition of quitting the country. The Fenian convicts Moriarty, Noonan, and Goulding have been transferred from Tralee to Mountjoy Prison, from which they will be removed to Portland, to undergo their terms of imprisonment.

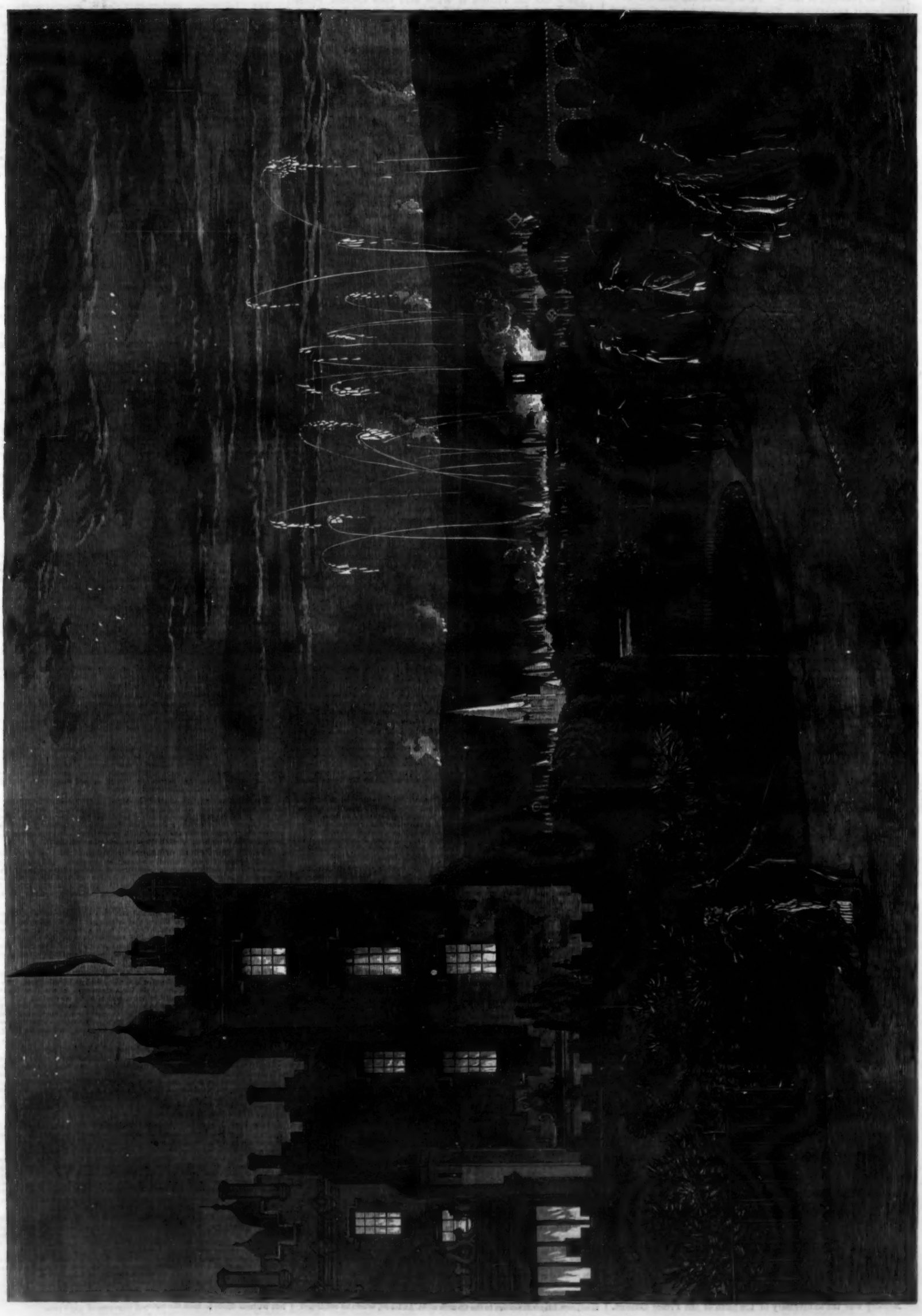
The Lord Lieutenant spoke at the Agricultural Society's Show dinner, at Dublin, on Wednesday evening. His Excellency observed that the poor in workhouses had increased, from a severe winter and spring; but during the past year the capital of the country had been largely augmented. Ireland was now free from crime; and if the Government inquiry into railways improved communication, the whole country would prosper. There was every ground for hope.

The fanatical and turbulent anti-Popery lecturer, Murphy, is still doing his best to provoke riot and bloodshed at Birmingham. He met a speaker on the Roman Catholic side, for a discussion, at the Tabernacle, on Friday week. There was a disturbance, and Murphy was pelted with rotten eggs. The chairman and others of Murphy's party then drew forth the pistols with which they had provided themselves and threatened to shoot their assailants. They were tumbled down stairs, however, without any worse hurt than a few bruises. The Tabernacle, a temporary wooden building, has since been pulled down.

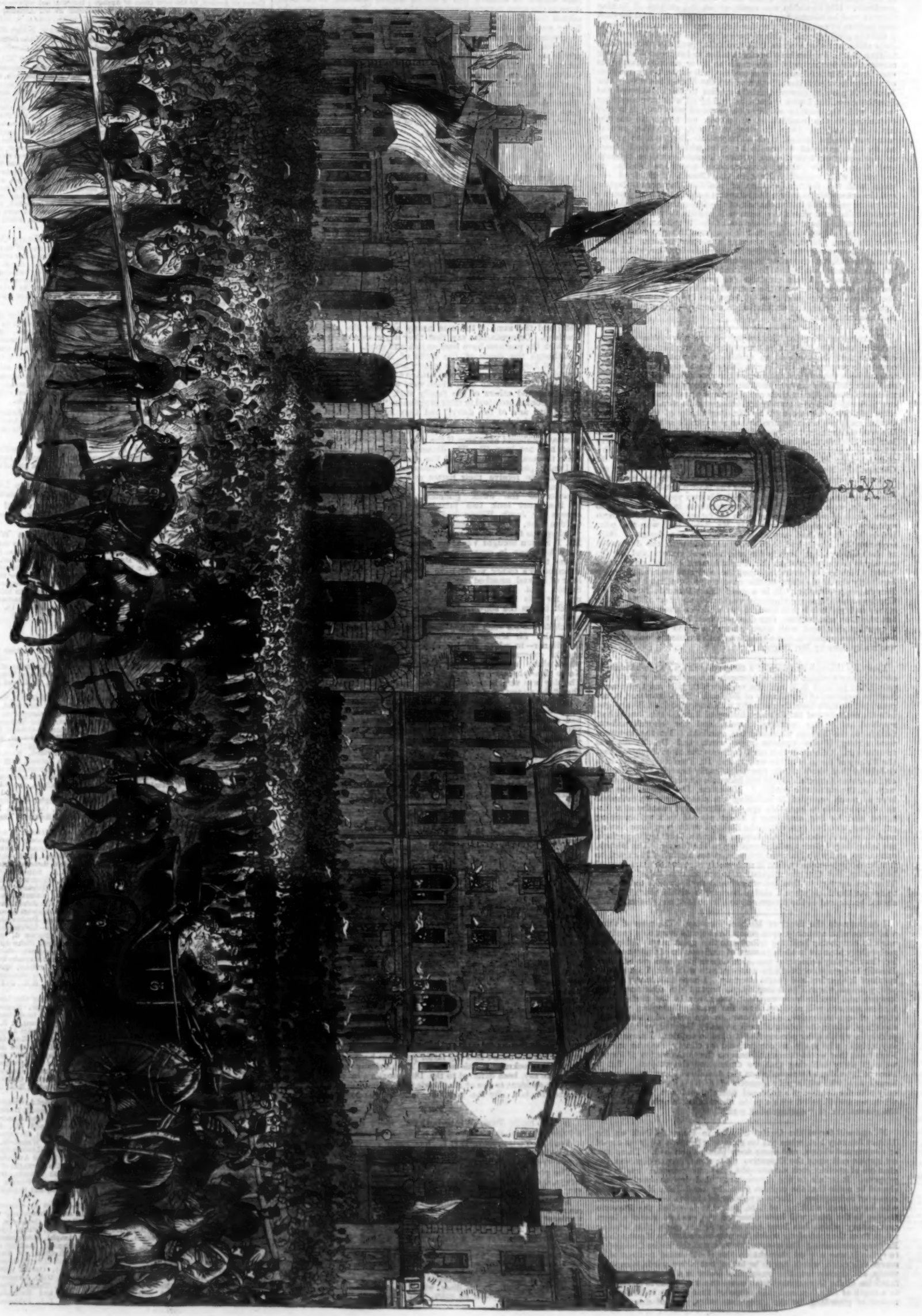
In accordance with the scheme of the Society of Arts, the Birmingham Chamber of Commerce has selected from sixty applicants twenty-five artisans to visit the Paris Exhibition, and report on the branches of manufacture in which they are severally skilled. The chamber met on Saturday afternoon, when the artisans were present, and were addressed by Mr. J. S. Wright, president of the Chamber of Commerce; Mr. Dixon, M.P., and Mr. W. C. Aitken. The last-named gentleman will accompany the artisans on their visit. They are to start on the 2nd of next month; each will receive £10 to defray his expenses.

The prizes and certificates awarded at the recent Oxford local examinations to pupils examined at Manchester were distributed in the Free-trade Hall, on Tuesday, by Lord Granville. His Lordship made some interesting remarks upon scientific education as bearing upon our pre-eminence in industrial arts, pointing out that other European States are making greater advances in this matter than Great Britain. The projected extension of Owen's College, Manchester, for which £40,000 is already subscribed, including £8000 to found a professorship of engineering, will be a practical response to Lord Granville's appeal. On Wednesday he laid the foundation-stone of the Warehousemen and Clerks' Schools, at Cheadle, near Manchester.

The town of Leamington is in a difficulty, Mr. Thomas Heath, of Warwick, one of the plaintiffs in the Chancery litigation against the Leamington Local Board, having taken steps to enforce the sequestration issued by the Court for the infraction of an injunction restraining the board from discharging the filtered town sewage into the River Leam, so as to pollute that stream. The penalty which the sequestration is to exact is £5000. The four commissioners named in the writ, issued several months ago, have given notice to the board's collector of rates not to pay any more money over to the treasurer; and a notice has been served upon the treasurer, who had a balance of £1700 to the credit of the board, not to honour any more cheques drawn upon him by the said body. The local board, therefore, are left without funds to meet the current expenses of the town.



THE QUEEN'S VISIT TO THE SCOTTISH BORDER: THE FIREWORKS, AND BEACON FIRES VIEWED FROM FLOORS CASTLE.—SEE PAGE 226.



THE QUEEN'S VISIT TO THE SCOTTISH BORDER: RECEPTION OF HER MAJESTY IN THE MARKET SQUARE, KELSO.—SEE PAGE 232.

"NOTHING IN THE PAPERS."

If the Bishop of Oxford had never done anything else to entitle him to the regard of mothers and children beside making a recent speech in the Isle of Wight, he would have laid up a great treasure of gratitude. His Lordship was speaking on the subject of Sunday Schools, and he administered to those who convert religious services into engines of persecution for the little ones such a castigation as it did one good to read. This picture which the Bishop drew of the little child (at an age when it is "volatile," and can no more help talking than a bee can help buzzing) taken to long school and long services, and having ugly faces made at it, or perhaps having its ears boxed, if it is fidgety or goes to sleep, will excite the sympathies of all who have seen the affliction which the Bishop describes. His Lordship's protest, however, chiefly applies to the children of the humbler class, but I wish it could be read by all who have anything to do with the sending children to places of worship. It is very disturbing to the meditations of grown up people to see the little ones nodding away in utter weariness, and either rousing into restlessness, which it is as impossible for them to control as for the leaves of a tree to be quiet when the wind blows, or else going off into a sleep, which humane curators tolerate, and from which more conscientious guardians shake up the child with reproof. Even in the Church of England services, with the frequent change of position, the organ-playing, and the ornaments to relieve the infantine senses, it is hard lines for the young ones; but in the chapels of the Dissenters, where there is no such relief, and where the sermon is usually very long, the case is harder still. I hope that friends not of the Establishment will not object to be told by a Bishop that it is a good thing to consider the little children. In Scotland there is a sterner torture. In some places it is necessary to throw the two services into one, and I have seen small children compelled to endure about four hours of penance; yet the Scots are not held to be without due affection for their own flesh and blood. These cruelties are practised from habit, and because parents underwent the same things in their childhood, but the reasons are not good ones. I hope the Bishop's speech will be reprinted as a tract, and distributed enormously—it is a gallant protest against inhumanity.

The correspondence on the subject of the new palace at Westminster, and who built it, is exceedingly interesting to those who consider that the fame of an architect is a matter in which his country is concerned. Sir Charles Barry has always been supposed to have been the original designer of the new Houses of Parliament, and, though it was known that he very wisely availed himself of much assistance during their completion, it never occurred to anyone to doubt that the grand conception was his own. Seven years after his death we are told by Mr. Pugin, son of the celebrated Gothic architect, whose genius was as remarkable as the close of his life was melancholy, that the original design of the Houses was the late Mr. Pugin's, that he was paid £400 for it, that Sir Charles Barry (then Mr. Barry) copied it, and that thus he won the great architectural prize of the day and a European reputation. But Sir Charles, like Mr. Pugin, has left a son behind him, "who is not ashamed to speak to his enemies in the gate," and who has spoken to very good purpose. Mr. Barry gives the most point-blank denial to the extraordinary charge; and though his own years, like those of Mr. Pugin, were too few when the palace was in hand for him to know much of what was going on in his father's office, he adduces evidence which clearly shows that Mr. Barry had won the prize before Mr. Pugin had anything to do with the designs. Subsequently Mr. Pugin had to do with them and with the decoration of the building; but, luckily for architectural history and for the setting at rest any question, Mr. Pugin himself has left on record a letter, which had, of course, escaped the notice of his son, in which he clearly shows the state of the case to be as alleged by Sir C. Barry's representative. It is a good thing that the fame of Sir Charles should be so convincingly vindicated, and that of Mr. Pugin stands so high that it is in need of no addition attempted by filial but mistaken admiration. One does not wish, however, to see such a question dismissed with mere generalities, and it would be interesting to the public, and a tribute to both architects, to show what was really done by Mr. Pugin.

Breaking through the door of a cathedral with a sledge-hammer is certainly one mode in which a hierarch can make his way to the pulpit, but perhaps it is not the mode which will most commend itself to members of the Church of England. Such, however, is represented to have been the means by which an opposition Bishop got into the cathedral of Dr. Colenso, Bishop of Natal. Dr. Twells had resolved to deliver sermons therein, and the churchwardens, faithful to the Bishop, withstood the assailant. But the hammers were strong, if the sermons were weak, and Dr. Twells was triumphant. Of course, this must convince the most doubtful that the Bishop of Natal is in the wrong, and Dr. Twells right, and it is delightful that men's minds can be so easily brought to conviction on important subjects. Could not hammers be made useful, in some way, in the ritualistic contest? Meantime, Dr. Colenso has not been so much occupied in watching the attack upon his cathedral as not to be able to keep his eye on friends and enemies at a distance, and he has sent over a smart reproof to a well-meaning gentleman, who had denounced the Bishop's writings without having read them, and who has been requested by his Lordship to perform the latter duty before again proceeding to the former. The Bishop, once more, and with his usual courage, states his belief in regard to the Pentateuch—namely, that it undeniably contains the language of inspiration, but that its inspiration is not what is called plenary. There are answers to this, but why should anybody take the trouble to answer anything when a sledge-hammer is within reach? Thor should be pleased at the recurrence to his mode of conversion.

I do but note the death of Michael Faraday. The pens of those who write with authority upon scientific subjects must be already at work in composing befitting tributes to this great man. There is a melancholy pleasure in adding a word of confirmation of the general belief that Faraday's character was as amiable as his genius was brilliant. Having had some occasions to communicate with him, I am able to speak of his perfect and gentle courtesy. I hope that many of the young people whom I have seen cluster around him after one of his lectures and receive new explanations, given in the readiest and kindest manner, will recollect how the great philosopher, with no show of condescension, came down to the level of their understandings, and in the minds of such as really listened to him fixed principles which older persons find it hard to acquire. I never knew any lecturer who made us comprehend so clearly what he meant. Even from that world-famous address on the Conservation of Forces we went away believing that we understood the subject. But I have no intention of trespassing on the domain of the many scientific biographers who will supply memoirs of Michael Faraday. I would only note the demise, at a good and peaceful old age, of a man of whom we are all proud with a pride above that which we take in the general run of "distinguished men."

No one will forget the fearful disaster in Regent's Park on the 15th of January last, when the ice gave way beneath a joyous crowd of skaters and sliders, and some forty persons perished. There was an instant call upon the Executive to do something to diminish the chances of another such catastrophe, and the response was to the purpose. It is fair to the Government that due acknowledgment should be made that the promise given by Lord John Manners is in course of redemption. There is nobody left in town now; but those who have been walking, of late, in what is called the Pleasure Garden in the park will have observed the gradual rise of a large promontory, which has been created with the earth that is being taken from the road along which the new branch of the Metropolitan Railway (connecting Baker-street station and the Swiss Cottage) is to run. It was a good thought in the Government contractor to secure this earth, which has to be taken but a few yards, comparatively, and thrown into the ornamental water in a huge heap. The intention of the Government is to cause the whole lake to be reduced to a depth of four feet, and it is supposed that this is to be done by means of plumbing for the dangerous holes, and of dropping in the earth by means of barges. But it is hoped that the work will be thoroughly done. At present there is a vast depth of foul mud at the bottom of the water, which has not been cleansed out since it was originally made; and, when the holes shall have been filled up, the lake should be drained and a sound bottom provided, as has been done in the more favoured waters of the west. For several years the odours from this lake have been of a most disagreeable character. Some good was certainly effected by the pumping into it of an enormous body of clean water, unphilosophical as the process seemed; but even this year the lake has been occasionally offensive, and it will be so under any conditions unless King George IV.'s mud be taken away. There is not a more picturesque piece of water in all Cockneydom, and towards dusk the effect is superior to that of a great many second-rate lakes in England and Scotland; but we have noses as well as eyes. With every reasonable confidence in the Government, and every gratitude for the service intended to be done, these remarks are made in order that it may be made "somebody's business," while London is out of town, to see that the lake reformers do their work thoroughly.

THE FARM.

A TRAVELLER from Yorkshire to London last week by the Midland, and back again by the Great Northern, Railway, would find all the crops ripe for the reaper, and a considerable portion of them carried. Except on the Easingwold part of the North-Eastern, near York, he would find nothing cut between York and Edinburgh. The glorious weather of this week has, however, matured the grain most wonderfully, and the harvest has now become pretty general in the East and West Ridings. Another week will find the men of the North Riding hard at work; but the wheat, though capital in quality, will be under an average. Barley will be above an average; it never ripened more uniformly, and is of undeniable quality. Oats are, generally speaking, rather later than usual, and "early oats" have lost their lead with the reaper. Beans inherited bad seed from last year, and have been deficient in consequence; and potatoes, though not free from blight among the "Lapstones," show a fair crop. All early-sown turnips have done remarkably well; and the same is the case nearly all over the east coast of Scotland. Octogenarians say that they never remember any year in which the pastures have been so rich and good.

Although the death of the Duke of Northumberland had the effect of keeping some of the gentry away, the Felton Show was a remarkably pleasant one. It was held in a field close by Mr. Riddell's, who lent all the gold cups which were won by Dr. Syntax, X Y Z, Galopade, and others of the family stud, to grace the flower show. Messrs. Donkin promised in their programme "a marvellous exposition of the fine arts of the dairy," and they kept their word, as butter was moulded into what looked like Japanese temples and designs, including an eight-twist cable. We were told that this was nothing to what we should have seen if the principal *artiste* of the neighbourhood had not been ill. The dinner audience were rather partial in their favours, as they cheered the spinsters lustily when they left, in Donkin phrase, the crowd of "roses and lilies," to walk up to the chairman to receive their butter prizes; but they did not notice the married ones. The Border Leicester tups were very far superior to the ewes, gimmers, and lambs, and the Rev. R. Bosanquet took two prizes with the former. In the pig classes Mr. Jacob Wilson had a second and two firsts with his Golden Link, Lady York, and a boar, and also firsts for his Gamester yearling, his four-year-old hunter "Ironsides," and his pony Lizette. Mr. T. Sutton brought Voyageur for the open prize of £20, and kept not a few away in consequence. Mr. Robinson's Peacemaker was second to him, and won the leaping prize. Two were left equal, and Peacemaker's owner would have divided, but his rival would not hear of it, and smashed the timber to bits at his next trial. Mr. Sutton had the offer of a cup or £20 when he went up for his prize after dinner, but he took the latter, which brings the showyard winnings of his horse in two seasons up to nearly £500. Showyard rules must be somewhat deficient which do not bar such monopolists, especially when they are eight years old. Sir Matthew White Ridley, M.P., was in the chair at the dinner—to which Lord Tankerville contributed the venison; and he congratulated the sheep-breeders on the arrangement by which sheep may now leave Northumberland for Ireland. The Kelso ram-sale last year suffered not a little from the restriction. The day was very beautiful, and the programme, which intimated that "the retreat of visitors would be covered under a grand shower of pyrotechnics," was so rigidly kept, that the fireworks were sent up without even waiting for "the gloamin'." The Keighley meeting had an immense attendance, and the interest of the pig-loving population, which is legion in those parts, rose to fever heat when Mr. John Booth was fetched from the horse classes to decide between the two judges, one of whom went for the middle breed as the sow cup winner, and the other for the large breed. The lot fell upon the former. Hexham held a meeting on Thursday, with shorthorns in the ranks at last. Mr. Thomas Booth's cattle have been at no show this year, which is much to be regretted, as Mr. Wetherell, who remembers both, considers Commander-in-Chief a grander bull than Comet ever was. In point of good females also the herd was seldom stronger. If we keep clear of plague, the Royal meeting at Leicester next July will have a peculiar cattle interest, as everyone will be eager to see what the herds have been doing during these two fallow years.

Mr. Carr has just published a history of the Killerby, Warlaby, and Studley herds; and Mr. M'Combie has also brought out his "Cattle and Cattle Breeders" (part of which appeared in the shape of a lecture before the Scottish Chamber of Agriculture) and gives us many an anecdote of the old graziers and many a wise feeding and breeding hint of his own. Mr. Unthank, of Nether-scales, Cumberland, has announced his herd, which is principally of Booth blood, for sale by private contract; and Mr. J. O. Sheldon has consigned to Mr. Strafford, from America, by the steamer which reaches Liverpool early next month, the two-year-old Third Duke of Geneva by Second Grand Duke, one Duchess, and four or five Oxfords for sale in England. For a little change, after so much Bates and Booth, we had a look the other day at the Chillingham wild cattle herd, which consists of eleven bulls, thirty-two females, and seventeen steers. Sir Edwin Landseer hid himself in the fern last year to sketch them for his Royal Academy picture, and on one occasion they charged almost into the spot, and then stopped when they winded him.

The Ryland rams have been selling well at Hereford, and a dozen from J. B. Downing's, of Holm Lacy, have averaged £9 5s. Mr. Borton has let his Blair Athol for the second season, for 50 gs., to Mr. Hutchinson, of Bedale. The next to him was let at 35½ gs, and we are not aware that the latter price has been exceeded by any Yorkshire flockmaster this season. The Aylesby letting has, we regret to say, been deferred to the 18th proximo, in consequence of a severe accident to one of Mr. Torr's feet, which has compelled him to keep his bed. By the latest accounts he was going on well.

Henry Selfe Page Winterbotham, Esq., has been elected member for Stroud, in the room of George Poulett Scrope, Esq., resigned.

Travers Twiss, Esq., D.C.L., has been appointed Advocate-General, in the room of the Right Hon. Sir Robert Joseph Phillimore, Knight, appointed Judge of the High Court of Admiralty.

The portrait of the new Solicitor-General, Sir Charles Jasper Selwyn, Q.C., M.P., which appeared in our last issue, was engraved from a very excellent photograph, by Mr. John Watkins, of Parliament-street.

Mr. Gathorne Hardy having refused to advise her Majesty to commute the sentence on George Britten, the farmer, convicted of the murder of his wife at Woolverton, the execution took place at Taunton on Thursday morning.

A horrid murder of a little child, named Fanny Adams, between seven and eight years old, was perpetrated at Alton, in Hampshire, on Saturday afternoon. The murderer, after killing the little girl with a stone, cut her body to pieces, hacking off the arms and legs, putting the head on a hop-pole, and throwing the eyes into the river. He is an attorney's clerk, named Frederick Baker, nearly thirty years of age. He has been committed for trial. In his diary, which was found in his desk at his master's office, he had made an entry, "Saturday, Aug. 24, killed a young girl."

LAW AND POLICE.

The new Judge of the Court of Admiralty, Sir Robert Phillimore, sat for the first time on Wednesday. He also took his seat in the Court of Arches, as the new Dean of Arches; but will not try the case of the Ritualistic practices of the Rev. A. Macconochie at St. Alban's, Holborn, having been counsel in that case.

The arbitrators in the case of "Chatterton v. Sims Reeves," for breach of agreement to sing in "Rob Roy," at Drury Lane Theatre, have awarded Mr. Chatterton £1500 damages and costs.

In the Central Criminal Court, last week, before Mr. Baron Bramwell, George Druitt, the chairman; Matthew Lawrence, the secretary of the Operative Tailors' Protection Association; and John Adamson, the chairman of the Amalgamated Tailors, with other members and active agents of the same bodies, were placed on their trial for unlawfully conspiring against the interests of certain master tailors. The trials lasted till the Thursday evening. Druitt, Lawrence, and Adamson having been convicted on the Wednesday, thirteen others were convicted on the Thursday. On the Friday they were called up to receive judgment. An affidavit was put in on behalf of the defendants Druitt, Lawrence, and Adamson, which stated that they had done all in their power to carry out the pledge given at the last sessions that the system of picketing should be discontinued. They were, however, overruled by the committee; but, now the illegality of the system had been established, they said that in future it would be discontinued. Mr. Baron Bramwell (after having consulted the Recorder) addressed the defendants upon the folly of their attempt to coerce other parties and prevent them from exercising their talents and labour in the way they thought fit, and said he thought the best course would be with all, except Knox, to take their word that the act, which they now knew was illegal, should not be repeated, and allow them to depart. As to the other defendant, Knox, who had been guilty of personal violence and intimidation, the sentence upon him would be three months' imprisonment, with hard labour.

At the Mansion House, on Monday, Mr. Henry Craig, a gentleman residing at Richmond, was summoned, under one of the bylaws of the South-Eastern Railway, for having unlawfully, with a key of his own, unlocked one of the carriages at the Cannon-street station. Sir R. Carden, the presiding magistrate, said it was a novel offence, and he had never heard of it before. The solicitor for the prosecution said he believed the South-Eastern Company was the only one that had framed a bylaw to meet such a case. They were, however, authorised to do so under their Act of Parliament. Mr. Craig was fined one shilling.

A Bristol pickpocket, two sessions ago, was tried for stealing a purse, but acquitted on the ground of insanity, and ordered to be detained as a criminal in a lunatic asylum during her Majesty's pleasure. Becoming tired of asylum life, he confessed that he had only been feigning madness, and at the Bristol Assizes, last week, he was tried again and sent to gaol for six months, with hard labour.

The application to the Home Secretary for the release of Messrs. Long and Pearce, sentenced to three months' imprisonment for an assault at the West Gloucestershire election, has been unsuccessful. Justice Shee not only refused to recommend a remission of sentence, but refused also that the prisoners should be treated as first-class misdemeanants.

For the murder of William Bradbury, who was found dead on the road near Luton, Bedfordshire, the three men who were drinking with him before at an inn in the town, by name Levi Welch, William Worsley, and James Day, have been taken into custody.

The wife of Mr. Charles Roberts, a master plumber and painter, in Chester-street, Kennington-cross, having become insane from excessive drinking, murdered her two youngest children—a girl of ten and a boy of twelve—by cutting their throats, and then killed herself.

Henry Farrington was sentenced to death at the Liverpool Assizes, on Monday, for the murder of his wife at Leigh, in Lancashire.

On Monday morning Hubbard Lingley, convicted at the Norfolk Assizes of the murder of his uncle, Benjamin Black, underwent the extreme penalty of the law in front of Norwich Castle.

In the little town of Granard, in Ireland, a Wesleyan preacher, named Campbell, was some time ago beaten almost to death by a Roman Catholic mob. The case is now before the magistrates, forty-two rioters having been summoned. Mr. Campbell is a street preacher, but was not attempting to preach at the time. There was a difference of opinion among the magistrates. Colonel Greville Nugent said—"I do think that people who go about the country disparaging other people with regard to their religious principles often cause riots, and things occur which in this country cause a great deal of harm. These people are quite as much attached to their religion as you are to yours." The case was adjourned to Sept. 18.

THE BOUNDARY COMMISSION.

THE districts appointed under this Commission to the various Assistant Commissioners are thus announced:—

1. Metropolitan (1 district, 9 inquiries), comprising boroughs of Chelsea, Finsbury, Hackney, London City, Marylebone, Tower Hamlets, Westminster, Lambeth, and Southwark. Major-General Bainbrigge, R.E., and Mr. N. J. Senior.

2. South-Eastern (2 sub-districts, 23 inquiries).—Sub-district A, comprising boroughs of Abingdon, Wallingford, Reading, Windsor, Guildford, Arundel, Chichester, Horsham, Midhurst, Shoreham, Andover, Christchurch, Lymington, Petersfield, Portsmouth, Southampton, Winchester, and Newport, Isle of Wight (16 inquiries). Mr. J. Horne Payne and Lieutenant-Colonel Biddulph, R.A. Sub-district B, comprising boroughs of Hythe, Maidstone, Rochester, Canterbury, Gravesend (new), Greenwich, Sandwich, Brighton, Hastings, Lewes, Rye, Chatham, and Dover. Counties to be divided, West Kent and East Surrey (15 inquiries). Mr. J. Kaye and Captain Palmer, R.E.

3. South Midland (1 district, 13 inquiries), comprising boroughs of Northampton, Peterborough, Huntingdon, Bedford, Hertford, Cambridge, Buckingham, Aylesbury, Wycombe, Marlow, Banbury, Oxford, and Woodstock. Mr. R. C. Palmer and Captain James, R.E.

4. Eastern (1 district, 11 inquiries), comprising boroughs of King's Lynn, Norwich, Thetford, Bury St. Edmunds, Eye, Ipswich, Colchester, Harwich, and Maldon. Counties to be divided, Norfolk and Essex (11 inquiries)—Captain C. Brackenbury, R.A., and Mr. Hugh Cowie.

5. South-Western (2 sub-districts, 39 inquiries).—Sub-district A, comprising boroughs of Calne, Chippenham, Cricklade, Devizes, Malmesbury, Marlborough, Salisbury, Westbury, Wilton, Bridport, Dorchester, Lyme Regis, Poole, Shaftesbury, Wareham, Weymouth and Melcombe Regis, Bath, Bridgwater, Frome, Taunton, and Wells. County to be divided, Somersetshire (32 inquiries)—Mr. W. S. Ollivant and Colonel Hamley, R.A. Sub-district B, comprising boroughs of Barnstaple, Exeter, Tiverton, Ashburton, Dartmouth, Honiton, Plymouth, Devonport, Tavistock, Bodmin, Helston, Launceston, Liskeard, Penrhyn and Falmouth, St. Ives, and Truro. County to be divided, Devonshire (17 inquiries)—Major Du Cane, R.E., and Mr. John Bramston.

6. West Midland (3 sub-districts, 30 inquiries).—Sub-district A, comprising boroughs of Birmingham, Coventry, Warwick, Bewdley, Droitwich, Dudley, Evesham, Kidderminster, and Worcester (9 inquiries)—Lieutenant-Colonel E. W. Ward, R.E., and Mr. John L. Wharton. Sub-district B, comprising boroughs of Lichfield, Newcastle-under-Lyne, Stafford, Stoke-upon-Trent, Tamworth, Walsall, Wednesbury (new), and Wolverhampton. County to be divided, Staffordshire (9 inquiries)—Mr. F. D. Longe and Captain Pratt, R.E. Sub-district C, comprising boroughs of Bridgnorth, Ludlow, Shrewsbury, Wenlock, Hereford, Leominster, Cheltenham, Cirencester, Gloucester, Bristol, Stroud, and Tewkesbury (12 inquiries)—Captain Wilson, R.E., and Mr. J. S. Dugdale.

7. North Midland (1 district, 12 inquiries), comprising the boroughs of Derby, East Retford, Newark, Nottingham, Leicester, Boston, Great Grimsby, Grantham, Lincoln, and Stamford. Counties to be divided, Derbyshire and Lincolnshire—Mr. E. Bullock and Captain Sandford, R.E.

8. North-Western (2 sub-districts, 22 inquiries.—Sub-district A, comprising boroughs of Clitheroe, Burnley (new), Blackburn, Preston, Rochdale, Bury, Bolton, and Wigan. Counties to be divided, North Lancashire and South Lancashire (10 inquiries)—Lieutenant Hosier, 2nd Life Guards; and Mr. F. W. Gibbs. Sub-district B, comprising the boroughs of Liverpool, Manchester, Salford, Ashton-under-Lyne, Oldham, Birkenhead, Chester, Stockport, Macclesfield, Warrington, and Stalybridge (new). County to be divided, Cheshire (12 inquiries)—Lieutenant-Colonel Gordon, R.E., C.B.; and Mr. P. Cumin.

9. Yorkshire (2 sub-districts, 21 inquiries).—Sub-district A, comprising the boroughs of Beverley, Hull, Malton, Middlesborough (new), Northallerton, Richmond, Scarborough, Thirsk, Whitby, York, Ripon, and Knaresborough (12 inquiries)—Lieutenant-Colonel Milward, R.A.; and Mr. Frederick Clifford. Sub-district B, comprising boroughs of Bradford, Dewsbury (new), Halifax, Huddersfield, Leeds, Pontefract, Sheffield, and Wakefield. County to be divided, West Riding of Yorkshire (9 inquiries)—Lieutenant-General Sir Richard Dacres, R.A., K.C.B.; and Mr. Serjeant Tindal Atkinson.

10. Northern (1 district, 15 inquiries), comprising the boroughs of Berwick, Morpeth, Newcastle-on-Tyne, Tynemouth and North Shields, Darlington (new), Durham, Gateshead, the Hartlepools (new), South Shields, Stockton (new), Sunderland, Carlisle, Cockermouth, Whitehaven, and Kendal—Major-General Moody, R.E., and Mr. A. Bathurst.

11. Welsh (2 sub-districts, 60 inquiries).—Sub-district A, comprising the boroughs of Beaumaris (Amlwch, Holyhead, and Llangefni), Cardigan (Aberystwyth, Adfar, Lampeter), Carnarvon (Bagnor, Criccieth, Conway, Nevin, Pwllheli), Denbigh (Holt, Ruthin, Wrexham), Flint (Caergwyle, Caerwys, Holywell, Mold, Overton, Rhuddlan, St. Asaph), Montgomery (Llanfyllin, Llanidloes, Machynlleth, Newtown, Welshpool), Radnor (Cefnllys, Knighton, Knucklas, Presteigne, Rhayader)—(7 districts, 38 inquiries)—Captain Nangle, R.A., and Mr. H. C. Merivale. Sub-district B, comprising the boroughs of Brecknock, Carmarthen (Llanelly), Cardiff (Cowbridge, Llantrissaint), Merthyr Tydfil, Monmouth (Newport, Usk), Swansea (Aberavon, Kenfig, Loughor, Neath), Pembroke (Milford, Tenby, Wiston), and Haverfordwest (Fishguard, Narberth)—(3 boroughs and districts, 22 inquiries)—Lieutenant-Colonel Reilly, R.H.A., and Mr. J. L. Johnson.

FINE ARTS.

We, with, doubtless, many others, share the surprise of a correspondent of the *Times* that fuller particulars have not been forwarded from Venice respecting the fire, on the 17th inst., in the Church of San Giovanni e Paolo, which is said to have destroyed Titian's "St. Peter, Martyr," which served as an altar-piece in one of the chapels. That so famous a masterpiece should perish and excite so little public comment seems incredible. By many the picture is considered Titian's absolute chef-d'œuvre; consequently, the very noblest example of colouring in the world, the beau-ideal of that quality in painting which it is not too much to say has been the chief aim of the great majority of modern artists. By connoisseurs of the old school it was classed as the third or the fourth picture of the great masters; Raphael's "Transfiguration" being placed first; Domenichino's "Communion of St. Jerome" second; and sometimes Daniele da Volterra's "Descent from the Cross," sometimes Titian's "Pietro Martire," third. This classification is not, however, generally accepted by more recent critics; and many would maintain that Titian's work is more valuable as an exemplification of fine colour than Raphael's is as a lofty dramatic conception and design. Certainly no one would dispute the supremacy of Titian's masterpiece in point of colour; it follows, therefore, if the report prove correct, that we have to deplore the loss of a grand representative work, ranking with the highest productions of human genius, whether in art, literature, or science. Nor is it only on account of its superb colouring that the picture is so famous. No mean authority considers the design and highly dramatic action worthy of Michael Angelo. The background of trees and distance is always instanced as the most remarkable proof of Titian's incomparable power in landscape-painting; and Sir Joshua Reynolds, in one of his "Discourses," warmly eulogises the grand yet naturally characteristic style in which the landscape background is treated. Our readers are familiar with the composition (which is simplicity itself), at least through engravings; the saint has already fallen on his knees in prayer; the assassin stands over him about to give the *coup de grace*; a strange horror pervades the scene; the trees take fantastic forms; the companion of the saint is seen escaping for his life in the distance. The Peter commemorated by the painter and canonised as a martyr was a Dominican monk, and an active agent of the Inquisition in the thirteenth century; in consequence of which he made himself many enemies, by one of whom he was at length assassinated at the entrance of a wood, near Barlassina, on the road from Milan to Como. He was accompanied by another brother of his order, who fled and escaped. A convent of Dominicans—now converted into an ecclesiastical seminary—was founded on the spot where the monk was slain. Fire has been a great enemy to Titian's renown: the important frescoes he executed in the Ducal Palace, Venice, were destroyed by its agency, with the exception of a fresco of St. Christopher. If the fire in the great Church of San Giovanni e Paolo was extensive, it may have destroyed many other treasures of art, including two fine works by Tintoretto, and pictures by other eminent Venetian painters, many remarkable sculptures, including monuments to several Dogos, notably that to Doge Andrea Vendramin, which is the most splendid monument of its kind in Venice.

We have also to record another severe loss by fire—the destruction of the noble cathedral at Frankfort-on-the-Main. To Germany the loss must be regarded as a national calamity, for this cathedral was the electoral church of the German empire.

The works for the restoration of the Chapter House, Westminster Abbey, are proceeding most satisfactorily. Several discoveries of artistic and archæological interest have been made, and such as will enable Mr. Scott to secure greater completeness to the restoration than could have been at first hoped. By the removal of whitewash and other vile additions of later times, many beautiful carvings, traces of paintings, and fragments of stained glass have been brought to light. We propose to take an early opportunity to report progress fully.

The managers of the General Water-Colour Exhibition at the Dudley Gallery, Piccadilly, which has proved so successful, propose to invite contributions for an independent exhibition of oil paintings at the same gallery, to open late in the autumn or early in the winter. Messrs. Millais, Faed, Frith, and Creswick, among the Academicians, and several other artists of distinction, are represented to be interesting themselves in the success of the new exhibition.

On dit that a contract has been made with the Hamilton Windsor Ironworks Company, of Liverpool, for the erection of 145 ft. of the north end of the Crystal Palace, destroyed by fire, bringing the restored part up to the spot at which the north transept formerly stood. The work is to be completed by November.

The *Nord* says the Paris Exhibition building will not be pulled down when the Exhibition is over, but will be used for an international bazaar, in which the productions of all parts of the world will be offered for sale. A canal is to be made between the Seine and the Champ de Mars, in order to place the building in direct communication with the river.

THE THEATRES.

The success of "The Unequal Match," and of Miss Amy Sedgwick as Hester Grazebrook, has crowded the Haymarket during the week; but these attractions will give way to Mrs. Scott-Siddons and Rosalind on Monday. We have already noticed the closing night, last week, of Mr. Hermann Vezin at the Princess's, and remarked on the triumph which he has gained in "The Man o'Airlie." But we have yet to bestow a word or two of commendation on Mrs. Hermann Vezin, who then appeared for the first time on metropolitan boards as Peg Woffington, in "Masks and Faces." Take it altogether, the piece was excellently acted. Mr. E. Price thoroughly understood the character of Sir Charles Pomander, and looked the vain and malicious fop admirably; and Mr. H. Forrester was suitably empassioned as Mr. Ernest Vane. Mrs. Vane, by Miss Edith Stuart, was a charming piece of acting. Perhaps Mrs. Vezin's style is too grave for the lively actress she had to delineate; nevertheless, she threw amazing force into the character, and in the dancing scene with poor Triplet's children won a well-deserved encore. Kitty Clive, too, in the hands of Miss Polly Marshall, had the merit of exact portraiture.

Miss Kate Terry has been winning golden opinions at the Adelphi, and showing modern playgoers how Beatrice and Pauline can be acted by a young lady of moderate force with much elegance and without any approach to rant. Mr. Neville has given a new version of Benedict and Claude Melnotte, and comes off, as it were, second best.

Mr. Andrew Halliday's successful drama of "The Great City" has travelled from Drury Lane to the Grecian, and has now been acted there for a week, and promises to retain the boards for many a week to come. New scenery has been provided for its production, and the London localities are here set with as much care and pains as on the classic boards where "Manfred" and "Faust" have lately flourished; but the railway-station scene, which was never effective, is omitted, and Blount is arrested in the chamber where Mogg has died. Miss Mandelbert is the heroine, Edith, and plays the part with judgment and spirit. Mr. Rayner, as the vagabond father, is unmistakably powerful; while Mr. George Conquest, as Ragged Jack, was irrepressibly vivacious and telling. On the whole, the reproduction of the drama at this house is a decided success.

The Tower Hamlets Artillery amateurs have had a gaudy night at Sadler's Wells, and played "Henry IV." to a full house on Monday. For amateurs, the performance was exceedingly well and evenly sustained. Mr. Lindo, as the King, acted with great steadiness and propriety; and Mr. George Burton, as the Prince of Wales, was well studied in his part, and showed considerable elocutionary power. Hotspur, we all know, is a character of great difficulty, and requires peculiar histrionic powers; but Mr. Scott Ramsay sustained it very fairly, and occasionally with remarkable spirit. Sir John Falstaff fell to the lot of Mr. T. A. Weaver, a gentleman who has won much reputation among amateurs, and who performs judiciously, though with scarcely sufficient humour for Shakspeare's jolly fat knight. The prison scene from "King John" was also admirably acted by Mr. J. L. Warner, as Hubert, and his pupil, Emily Levettes, as Prince Arthur. Mr. Walter Joyce delivered an address written by Mr. G. Linnæus Banks.

NATIONAL SPORTS.

Owing to the dearth of sport on so many grouse-moors, the attendance of "the upper ten" at York was unusually large. The running was good, and the list is likely to be improved by the excision of some effete old stakes which have lingered too long. Betting upon the Great Ebor Handicap was enormously heavy, and it is said that Captain Machell landed £5000 on the Nutbourne filly in the Badminton Selling Stakes. She was put in to be sold for 30 sovs., and was knocked down to Mr. Ten Broek for 690 gs. By the new rule, as owner of the second horse, he had £830 of this sum credited to him. The fund cleared £540 by sales during the week. The two-year-old racing was singularly short of interest; and there was little in it beyond the failure of that nice Derby colt Tregeagle to give Quality 11 lb. Despite the ban under which he seems to lie, Voltigeur's stock have been picking up a great many "speedy cut" races this year; but still the turning point of his fortunes for next season will be the performance of the much-talked-of Géant des Batailles at Doncaster. "Those irrepressible Richmond men" seem to have forgotten their Plaudit sorrows, and are nearly as sweet upon the Earl's colt as they were on the Major's. The racing world is anxious to see several more of its two-year-old veiled prophets and prophetesses—to wit, Typhœus, Buttercup, Glenderg, Harvester, Viscount, &c.; and Doncaster, which promises to have a bumper meeting, may drag them to light at last. Slanderer, one of its thousand-guinea yearlings of 1866, ran very badly at York; and Snarry's Miss Agnes filly, a gift from his master, Sir Tatton Sykes, finished last. She could not go up to Doncaster for sale last year in consequence of a sandcrack, and we fear she has proved a very different gift-horse to Tibthorpe.

The way in which a St. Leger colt, Mandrake, "snapped" Beeswing for the Ebor Handicap finds its most striking parallel in the St. Leger of fifty years ago, when John Jackson took things too easily on Blacklock, and was caught by Bob Johnson on Ebor. Nearly as startling a surprise awaited the Yorkshiremen in the Great Yorkshire Stakes, where Vauban, with 2 to 1 on him, was cut down in a canter by Achievement. The enthusiasm of the fielders was beyond all precedent, and it did not wear off, as on Tuesday the mare and Hermit were level in the St. Leger quotations at 7 to 4 (t). This is the twenty-fifth anniversary of the stake, and so far, up to last year only five St. Leger winners—Nutwith, Stockwell, Saucebox, Gamester, and Blair Athol—had run it, and Stockwell alone had won the double event. After seeing her die away to nothing at the hill both in the Middle Park Stakes, the Oaks, and at Ascot, it is difficult to doubt that Achievement's pipes are wrong; but York had no hill to bother her at the finish; and never did mare look better after her eleven weeks' quiet at Ilsley. The defeat of Vauban is a very fragile foundation for the "plungers" to build on. After he had disappointed his noble owner in the Derby the stable ran him for nearly everything; hence he has been working ever since the Craven Meeting, where he could only just beat Wroughton by a head. This race did not make his form anything very great to begin with, and never was horse shut up more unmistakably in the Derby. When, therefore, we see a very stale horse, who cannot stay the Derby distance, run over a dead level course like Knavesmire, and get caught and beaten—after making his own running for nearly a mile of the way—by a very quick mare, who waited upon him without being extended, we cannot jump to the violent conclusion that she is "an undoubted stayer," more especially when her antecedents and her blood are not favourable to the idea. She may run into a place at Doncaster, but we should not like to take her chance against that of Hermit, or even Challenge. The defeat of Moulsey by "Watts' grey," as the Yorkshiremen fondly term him, was a striking sequel to this race. His friends say that Strathconan loves this course as much as Ellerdale did; but his "acting" on it, or any other, depends upon its being dry. D'Estournel and Marksman have been quite lost sight of lately in the St. Leger quotations, and it seems very doubtful whether the latter will go. If he has been doing enough work, the touts have all been deceived.

The sales at York were very much larger than usual. Mr. Jackson was not by any means satisfied with his average; but it was generally thought a very good one, as very few of the yearlings were from the dams of winners. Slenningford (900 gs.) was purchased for £100 as a foal; and four Blair Athols averaged 615 gs., and two Thormanbys 585 gs. Considering how few of them have run in public so far—and the downfall of Master Butterfly, Kettleholder, Beanstalk, and Rejoinder, as well as the tricks of The Sawyer—the Kettledrum stock sold well. The second Rawcliffe stud sold wretchedly, and Mr. Chaplin gave the highest price (90 gs.). Acastor's own sister Quality had, unfortunately, not run when he was put up, or his 270 gs. would have been more than doubled. As it was, Mr. Chaplin got him at that low figure. Mr. H. Darley's mares and foals went very cheap, and Sir George Chomley made pretty good prices for three of his St. Hubert yearlings. Mr. Newton is said to have a very fine Thormanby yearling out of Margaret of Anjou for Doncaster.

We are glad to hear that Lord Middleton's huntsman, Ben Morgan, who broke a blood-vessel some weeks since, is considerably better, and able to accompany the hounds at exercise once more. Dick Christian, grandson of the departed "Dick," of Melton fame, and huntsman to the Raby and Hartforth, is very unwell with a lung affection, and it is feared that he may have to give up hounds entirely. Mr. Cookson succeeds Major Elwin as Master of the Hurworth; and Martin Care, who was lately hunting hounds abroad, has gone to the Herefordshire. The earth-stoppers give a good account of the litters in the Bedale country; but at present it has been decided to hunt only two days a week to begin with. Lord Downe has headed the subscription-list for the purchase of the hounds with £50.

The amateur captaincy and gold medal of the London Swimming Club has been won, on the Serpentine, by Mr. G. H. Vyse for the ensuing twelvemonth.

An old sailor of Trafalgar, named Robert Christie, died, at the age of ninety-eight, at Alloa, in Scotland, a few days ago.

The Colonial Office is about to send out a commission, which will consist of two medical men, one civil and one military, with an engineer, to investigate the causes of the late dreadful epidemic at the Mauritius.

The Queen has been pleased, on the nomination of the Marquis of Exeter, to appoint Captains the Hon. Frederic Barnewall Best and William Cuninghame Cuninghame to her Majesty's Hon. Corps of Gentlemen-at-Arms.

One day last week an American barque, named the Cashmere, arrived in the harbour of Queenstown, having in tow a large iron ship, which she picked up off Cape Clear. The Cashmere was bound from Quebec to Cardiff, and on the voyage she experienced bad weather. When she arrived off Cape Clear she observed an apparently abandoned ship lying to the south. The Cashmere hove to, and after a while came up to the derelict. She was thoroughly searched, but no man living was seen on board, and the vessel presented the appearance of having gone through a great deal of bad weather. Her name is the Czar, and she belongs to Glasgow, from which port she was bound to Quebec. There are no tidings of her crew, but it is hoped that they were picked up by some passing vessel. The derelict at present lies at Passage.

It was announced some time ago that the French Government had authorised an Anglo-French company to lay a telegraphic cable from Brest to the American continent. The preliminary soundings, commenced four months ago, are complete. The cable will be laid from Brest to St. Pierre Miquelon, it having been ascertained that the bottom of the ocean along that line is favourable to the design. From St. Pierre it will go along the coast of New Brunswick and the shores of the States of Maine, New Hampshire, Massachusetts, and Connecticut. A direct line from Brest to New York would offer many difficulties, owing to the tremendous depth of some parts of the ocean, where the officers employed have been unable to find soundings, and where, consequently, immense quantities of cable might be sunk without result. The immersion of the cable, now being made in London, is to begin in May next year, and the Great Eastern is to be employed to lay it. It is hoped that a month will suffice for the work, and that in July, 1868, at latest, France and the European continent will be in direct telegraphic communication with America.

WILLS AND BEQUESTS.

The will of Sir Anthony George Perrier, C.B., late British Consul for Brest, in the Department of Finisterre, Morbihan, and Cotes-du-Nord, was proved in London by Follett Pennell, Esq., one of the executors, power being reserved to William Pennell, Esq., the other executor. The personalty in England was sworn under £3000. The will was executed at Paris, May 5, 1859, and he died at Brest, July 8, 1867, aged seventy-four. The testator was the nephew of Sir A. Perrier, formerly Mayor of Cork; and married, in 1816, Louisa, daughter of W. Pennell, Esq. He has bequeathed to his wife, Lady Perrier, a life interest in all his property in Great Britain, and on her decease he leaves the same to his daughter Louisa, likewise for life; but in the event of her marrying the property is to be equally divided amongst all his daughters, in certain specified proportions, or at her death to the surviving daughters. The testator further states that he does not leave any part of his property in England to his son John, of the Admiralty, in London; nor to William, a Lieutenant in the Navy, both being better off than his wife and daughters, he having provided for them by his French will out of his property in France.

The will of Morgan Treherne, Esq., M.P. for Coventry, of Stratford-place, has been proved in London, by his son, Morgan Dalrymple Treherne, Esq., the sole executor. The personalty was sworn under £30,000. The testator was Deputy Lieutenant for Surrey, and died July 11, 1867, at Long Ditton, at the age of sixty-four, having executed his will March 10, 1865. He bequeaths to his wife an immediate legacy of £1000, and his carriages and horses, and a life interest in the remainder of his personal estate, including the leasehold residence, with the furniture. He has bequeathed legacies of various amounts to his sons and daughters, and appoints his son, Morgan Dalrymple Treherne, residuary legatee.

The will of Miss Anna Maria Prinald, formerly of Eltham, Kent, but late of Camberwell-grove, Surrey, was proved in London, under £18,000 personalty. She leaves the following charitable bequests:—To the Royal Hospital for Incurables, Putney, and the Asylum for Idiots, each £500; to the Orphan Working School (Haverstock-hill), the Law Association for Widows and Families of Professional Men, Hospital for Consumption and Diseases of the Chest, Houseless Poor Committee Society (Old Broad-street), Convalescent Home for Females (Bayswater), each £200; to the Church of England Scripture-readers' Association, the Friendly Female Society (Camberwell), Infant Orphan Asylum, Church Pastoral Aid Society, British and Foreign Bible Society, Society for the Propagation of the Gospel in Foreign Parts, London Hospital, Colonial and Continental Church Society, Cancer Hospital, Benevolent or Strangers' Friend Society, and the Society of Friends of Foreigners in Distress, each £100; to the Deaf and Dumb Asylum, Old Kent-road, and the Association for the Welfare of the Blind, Euston-road, each £50; to the ragged schools in Southwark, £300; to the Incumbent of Camden Church, Camberwell, £100 for charitable objects in connection with that church; to the minister of Blackheath Park church, £100, to be applied in like manner; to William Moon, of Brighton, inventor of a system of embossed reading for the blind, or to the treasurer of the society formed for embossing books on that system, £100. She bequeaths to the Vicar of Eltham £500 stock, the dividends to be applied in keeping the family tomb in repair, and the surplus to be given to the deserving poor of that parish.

The wills of the undermentioned were recently proved:—The Right Hon. Caroline, Baroness Churston, under £2000 personalty; the Baroness Georgiana Solardi, £4000; the Hon. John Yarde Buller, £9000; the Hon. Henrietta Jones, £8000; and the Hon. Henry Byerley Thomson, one of the Puisne Judges at Ceylon, £5000 personalty in this country.

The Queen has been pleased to confer upon Major Greig, chief constable of Liverpool, the civil honour of Companion of the Bath, for his services in the suppression of the Fenian outbreak at Chester.

Admiral Harris, now her Majesty's Minister at Berne, has been appointed to the mission at the Hague, vacant by the resignation of Sir John Milbanke Huskisson. Admiral Harris will be replaced at Berne by Mr. John Lumley, who had just been appointed Minister at Dresden when that mission was abolished in consequence of the virtual annexation of Saxony to Prussia.

Countess Danner, widow of the late King of Denmark (by a private or "morganatic" marriage, which did not make her Queen), is engaged on a very benevolent mission, that of training children for domestic service, and she has turned her palace, called Jägersprits, into a complete asylum for children of from two to four years of age, whom she will feed, clothe, lodge, and train up until they are of age to maintain themselves.

MONETARY TRANSACTIONS OF THE WEEK.

(From our City Correspondent.)

The dealings in most public securities have been very moderate; nevertheless, no change of importance has taken place in the quotations:—Consols, for Money, have been done at 93¾; and the same figures for Sept. 10; Reduced and New Three per Cents have marked 94¾; Exchequer Bills, 20s. to 30s. prem.; Bank Stock, 281 to 283; Indian Stocks, &c., have been firm; India Stock, 220 to 225; Ditto Five per Cents, 113 to ½; Rupee Paper, 102 to 104 and 106 to 109; India Bonds, 65s. to 70s. prem.

There is a large supply of money on offer in the discount market. The inquiry for accommodation has been very moderate, and the best short bills have been done at 1¼ per cent. The value of money on the Continent has ruled about stationary.

Rather large supplies of bullion have come to hand, and a moderate addition has been made to the stock of gold in the Bank of England. The exports have been rather limited.

In the Foreign Stock market very little has been passing. Bank and Miscellaneous Shares have commanded very little attention.

The Railway Share market has been devoid of animation, and prices have had a drooping tendency.

The return of the Bank of England shows the following results when compared with the previous week:—

A decrease of circulation of	£324,000	An increase of bullion of	£42,005
An increase of public deposits of	833,704	A decrease of rest of	95,160
A decrease of other deposits of	590,315	An increase of reserve of	289,145
A decrease of securities of	75,636		

The circulation, including Bank Post Bills, is £24,914,660. Public deposits amount to £7,330,918; and private deposits to £18,870,130. The securities held represent £30,838,190; and the stock of bullion is £23,574,776. The rest figures for £23,574,774.

THE MARKETS.

Corn Exchange, Monday.—The show of English wheat on sale was moderate, and nearly all white of this year's growth. The demand ruled inactive, and prices declined 2s. to 3s. per quarter. The supply of foreign was moderately extensive, for which the demand was in retail, at 1s. per quarter less money. Barley was in fair request, at firm prices; but the quantity offering was small. Floating cargoes of grain were dull, and the quotations had a drooping tendency. The malt trade was inactive, and last week's currencies were barely supported. The show of oats was extensive, but the inquiry was flagging, and prices ruled in favour of buyers. In beans and peas there was little passing, but we have no change to report in the quotations. In the value of town or country made flour there was no alteration.

Wednesday.—The imports during the week have been rather large, and the condition of the samples offering was good. For both English and foreign the demand was very dull, and Monday's reduced quotations were barely supported. Barley was steady at late rates. Malt continued dull. Oats commanded previous terms, and no change took place in the value of flour. Beans and peas were a slow sale.

Arrivals this Week.—English and Scotch: Wheat, 1010; barley, 60; malt, 230 qrs.; flour, 1020 sacks. Foreign: Wheat, 14,800; barley, 10,190; oats, 24,820; maize, 3930 qrs.; flour, 4230 sacks.

English Currency.—Wheat, 60s. to 70s.; barley, 32s. to 43s.; malt, 51s. to 70s.; rye, 34s. to 36s.; oats, 21s. to 34s.; beans, 38s. to 43s.; peas, 38s. to 44s. per quarter; flour, 45s. to 60s. per sack of 280 lb.

Seeds.—In clover seed there is little passing; but good qualities command full prices. Trefoils and tares are steady. New rapeseed sells slowly, at a reduction of 2s. on last Monday's currency.

Mustard, 10s. to 16s.; tares, 6s. to 6s. 6d. per bushel; canary, 52s. to 60s.; red clover seed, 52s. to 56s.; cyprus, 10s. to 20s.; linseed, 60s. to 72s.; rapeseed, 64s. to 66s. per quarter; coriander, 18s. to 20s.; trefoil, 20s. to 24s. per cwt.; linseed cakes, £10 10s. to £11; rape cakes, £5 5s. to £5 10s. per ton.

English Grain Sold Last Week.—Wheat, 22,950; barley, 671; oats, 1675 quarters.

Averages of Grain.—Wheat, 60s. 3d.; barley, 39s. 6d.; oats, 23s. 11d. per quarter.

Tea.—The market is dull, and nominal in value. Indian descriptions, however, generally realise late rates.

Sugar.—Both raw and refined goods are inactive; but, in the few sales effected, previous terms have been maintained. The stock is now 160,417 tons, against 114,514 tons last year.

Coffee.—There is a fair demand for the better kinds of coffee, but inferior descriptions are again lower. Stock, 34,830 tons, against 16,950 tons in 1866.

Rice.—There is very little passing in any kind, but values are unchanged. Stock, 4890 tons, against 11,490 tons at this time last year.

Provisions.—The butter market has been inactive, and the arrivals of foreign are rather short. Friesland sells at 102s. to 104s. Irish hams have advanced 2s. to 3s. per cwt. Good Irish bacon sells steadily, at late rates.

Spirits.—There is very little demand for rum, but prices are firm. Brandy and grain spirits are inactive.

Hay and Straw.—Old meadow hay, £3 to £4 5s.; new ditto, £2 15s. to £3 15s.; old clover, £4 to £5 15s.; new ditto, £3 to £4 10s.; straw, £1 10s. to £2 3s. per load.

Wool.—At the colonial sales last week the biddings have been active, and all but inferior qualities have supported May rates. In English there is very little doing.

Potatoes.—The arrivals of potatoes are seasonably extensive, and there is a fair demand, at prices varying from 60s. to 180s. per ton.

Hops.—The accounts from the plantations are encouraging, and it is now expected that even the most backward grounds will produce a small quantity of hops. The market is very inactive, and prices are only nominal.

Tallow.—The market is inactive:—Old Y.C., on the spot, is quoted at 44s. 6d.; Ukraine, 43s. 6d.

Oils.—Linseed oil sells slowly, at £30 to £30 5s. Rape is steady, at £36 for English brown; £40 to £40 10s. for refined; and £43 foreign. Olive and cocoanut oils are firm, at late rates. No change in palm oils.

Metropolitan Cattle Market (Thursday, Aug. 29).—Only a moderate supply of beasts was on sale here to-day, yet most breeds moved off slowly, at Monday's currency. The top figure was 5s. per 8lb. There was a fair average number of sheep in the pens, and sales progressed heavily, at previous rates. The primest Downs and half-breds realised 5s. 2d. to 5s. 6d. per 8lb. Lambs were very dull, at from 6s. 6d. to 7s. 6d. per 8lb. The supply was seasonably good. Calves were in short supply and steady request, at full prices. Pigs and milch cows were very dull, at late rates.

Per 8lb. to sink the offal:—Coarse and inferior beasts, 3s. 4d. to 3s. 8d.; second quality ditto, 3s. 8d. to 4s. 2d.; prime large oxen, 4s. 4d. to 4s. 8d.; prime Scots, &c., 4s. 10d. to 5s. 0d.; coarse and inferior sheep, 3s. 8d. to 4s. 0d.; second quality ditto, 4s. 0d. to 4s. 2d.; prime coarse-woolled ditto, 4s. 4d. to 4s. 6d.; prime South Down ditto, 5s. 2d. to 5s. 6d.; large coarse calves, 4s. 0d. to 4s. 6d.; prime small ditto, 4s. 10d. to 5s. 4d.; large hogs, 3s. 4d. to 3s. 10d.; neat small porkers, 4s. 0d. to 4s. 4d.; Scots, 5s. 8d. to 5s. 6d.; suckling calves, 21s. to 26s.; and quarter-old store pigs, 18s. to 22s. each. Total supply: Beasts, 712; sheep and lambs, 9260; calves, 105; pigs, 208. Foreign: Beasts, 206; sheep and lambs, 670; calves, 140; pigs, 90.

Newgate and Leadenhall.—These markets are fairly supplied with meat, which sells slowly, at late rates.

ROBERT HANNAY.

REV. JOHN BEDFORD,
PRESIDENT OF THE WESLEYAN METHODIST CONFERENCE.

THE Wesleyan Methodist Conference, held this year at Bristol, by a large majority elected the Rev. John Bedford to its presidential chair. We give a Portrait of this gentleman, who was born at Wakefield, in Yorkshire, in the year 1809. After having received a good education, he commenced the study of the law at Leeds, where he remained until his entrance upon the vocation of the Wesleyan ministry. He has occupied some of the most important pulpits in the Wesleyan Church, and some of the best circuits were glad to have him as their superintendent. For several years he has been connected with the affairs of the Wesleyan Trust, and as the head of that department he has rendered very valuable service. The centre of this department is in Manchester, and it is there that Mr. Bedford has performed an amount of work which few men could have endured, and which must have taxed even his strength of body and mind. In all the relations of his public life Mr. Bedford has well maintained the dignity and propriety of the ministerial character. As a preacher, he is "sensible but not sensational," and his pulpit discourses are generally considered to be able, edifying, and instructive. He is distinguished not only as a preacher but as a pastor; yet it is in the affairs of ecclesiastical business that his peculiar powers are specially displayed. He has done the work of almost every office in Methodism, and his long experience has given him great facility and accuracy. His elevation to the highest honours of his Church is only the fitting reward of his long and laborious services.

The Portrait is engraved from a photograph by Mr. James Cooper, of Northallerton.

THE REV. JOHN BEDFORD, PRESIDENT OF THE WESLEYAN METHODIST CONFERENCE.

ST. SAVIOUR'S CHURCH,
EASTBOURNE.

THE new Church of St. Saviour, in South-terrace, Eastbourne, has been built at the sole cost of Mr. G. Whelpton, of Hastings, on a site given by the Duke of Devonshire. The architect was Mr. G. E. Street. The building, shown in our Illustration, consists of a nave, chancel, and side aisles, with organ chamber, vestry, and west porch. The nave is 90 ft. long and 35 ft. wide. There are six bays, the last of which, as it joins the chancel, is placed diagonally, so as to form with the chancel arch an apse, which has a very good effect. The nave is lighted by a lofty clerestory, the windows of which are 10 ft. high by 5 ft. wide. The basement of these windows is about 25 ft. high, supported upon arches and stone pillars. The ridge till of the nave is at a height of 70 ft. The side aisles are covered with a lean-to roof; the windows proportionally small, and of two lights. At the east end of the aisles, parallel with the diagonal bay of the nave apse, are placed, on the north side, the organ chamber, and on the south side the vestry, covered by a gable roof. The chancel is 28 ft. deep and terminates in an apse; it is lighted by four windows, 14 ft. high and 7 ft. wide, of which the base is 15 ft. from the ground. The roof is groined in brick, with stone ribs, these latter springing from shafts of Devonshire marble. The lower parts of the walls are left for future decoration. The floor of the chancel is laid with Godwin's encaustic tiles, relieved with white marble and Warwick stone. This floor is a good instance of Mr. Street's well-known powers as an architectural colourist. The tints are browns and yellows, with black and red; on the higher levels, within the communion rail, green and white are introduced, and the effect of the whole is warm and rich. The tiles are remarkably even, and some of the patterns are beautiful specimens of the present advanced state of this branch of ecclesiological art. The stalls and desks in the chancel are of English oak; there is also a light, open Early English oak screen in the arches on the north and south sides of the chancel. The glazing throughout is in three tints of green cathedral glass, and arranged in squares of different size. In the windows of the south aisle and nave apse, Powell's stamped quarries are introduced; these are marked with Mr. Street's patterns. The glass is very thick, and the cool, silvery effect is exceedingly good. The nave is furnished with open seats of deal, stained; and the floor laid with Godwin's tiles in various designs—the colours used being black, red, and buff, and the variety obtained by squares and diamonds is very satisfactory. The pulpit is on the south side. It is of stone, and round; above the clustered pillar, which forms the base, a bold cornice runs round, deeply and richly carved in Early English foliage and fruit; above this, the body of the pulpit is pierced with open panels. It is surmounted by a heavy projecting cornice, and finished with Devonshire marble. The font stands at the west end, between the two west doors; the base is round, eight dwarf pillars of marble support the deep bowl, which is octagonal on the outside. The interior, as seen from the west end, produces an impression of dignity and spaciousness unusual in a parochial church.

ST. SAVIOUR'S CHURCH, EASTBOURNE.

INAUGURATION OF THE STATUE OF
TENIERS AT ANTWERP.

THE ceremony of uncovering the statue of David Teniers, sculptured by M. Ducaju, took place, a Antwerp, on Sunday week. That famous Flemish painter was born at Antwerp, in 1610. He was a pupil of Rubens, and married the daughter of Breughel, another artist of celebrity. He was appointed, in 1644, painter in ordinary and domestic chamberlain to the Archduke Leopold William, Governor of the Netherlands, and afterwards enjoyed the favour of Don John of Austria, King Philip IV. of Spain, and William of Orange. In 1663 he established the Academy of Fine Arts which is still flourishing at Antwerp. He died at the age of eighty-four, having produced an immense number of pictures, chiefly of rustic and familiar subjects, full of humour and character, which are to be found in all the great collections of Europe.

The inauguration of the statue was attended by the Governor of the city of Antwerp, the burgomaster and aldermen, the members of the Town Council, the professors of the Academy, the directors of the Royal Society of Fine Arts, the representatives of the Arts' Club, the Society of Artists, and the Royal Harmonic Society of Antwerp. The principal personages having taken their places round a table, on which a book was laid to bear record of the proceedings, a discourse, in the Flemish language, was pronounced by one of the municipal dignitaries, M. de Hane-Steenhuyse, and the veil which had covered the statue was then withdrawn, amidst the loud acclamations of the people, while the drums of the National Guard beat a sonorous peal. The official witnesses of the act having duly entered their names in the book, another speech was delivered by Professor Beaufaux, in the absence of M. de Keyser, director of the Academy of Fine Arts; and he was followed by M. de Verhoeven-Bal, president of the department of sculpture in the Cercle Artistique, whose speech brought the proceedings to a close. We present an Illustration of this interesting scene.

MUSIC.

As we have already mentioned, the Hereford Musical Festival was held during last week. The arrangements for this festival were on a larger and more costly scale than for any previous "meeting of the three choirs." The instrumental orchestra included the most eminent members of the Royal Italian Opera band; the chorus, considerably larger than that of the last festival, was selected from the three cathedral choirs, with additions from the metropolis and several provincial towns; and the list of solo-singers comprised Mdme. Lind-Goldschmidt, Mdlle. Titiens, Miss Edith Wynne, Miss Julia Elton, Mdme. Patey-Whytock, Mr. Sims Reeves, Mr. Montem Smith, Mr. Santley, and Mr. Weiss. There were no Italian vocal performers among them. Mr. Townshend Smith, organist of the cathedral, was the conductor of the festival.

It began on Tuesday morning with an appropriate sermon by the Dean of Hereford, and full choral service at the cathedral, Dr. Wesley, the organist of Gloucester Cathedral, presiding at the organ. Then followed Spohr's oratorio "The Last Judgment," and Handel's "Israel in Egypt," with Macfarren's additional orchestral accompaniments; which was preceded by Dr. Wesley's, "Ascribe unto the Lord," one of the grandest works of that great composer. The first miscellaneous concert, on Tuesday evening, was varied and agreeable, but presented no remarkable feature.

The second morning performance, on Wednesday, consisted entirely of Mendelssohn's "Elijah," which attracted peculiar attention from the appearance of Mdme. Lind-Goldschmidt in the principal soprano part. To say that the voice of the renowned Jenny Lind was all that it had ever been would not be entirely true; but, in all that belongs to the highest qualities of an artist—power, sublimity, and pathos—there was no descent from her lofty eminence. The soprano music was divided between Mdme. Goldschmidt and her only living rival, Mdlle. Titiens, who sang some of the pieces (particularly "Hear ye, Israel") in a manner not to be excelled. The part of the Prophet was grandly sustained by Mr. Weiss; but Mr. Sims Reeves, who was to have sung the tenor-solos in the second part, did not appear, and his place was efficiently supplied by Mr. Montem Smith. On the whole, Mendelssohn's master-work has seldom been more admirably performed.

At the second miscellaneous concert, on Wednesday evening, the principal feature of the programme was the charming "Acis and Galatea" of Handel. It was admirably given, the principal solo parts being sung by Mdlle. Titiens, Mr. Montem Smith, and Mr. Santley. Its ensemble, too, was excellent, Mozart's additional orchestral accompaniments being played with much delicacy.

The third morning performance, on Thursday, included the new sacred pastoral cantata "Ruth," composed by Mr. Otto Goldschmidt, expressly for this festival, of which it was the only novelty. It has become needless for us to enter into any account or criticism of this work, for, unfortunately, it has turned out a failure, and has been condemned without a dissenting voice. Mr. Goldschmidt is certainly an able musician, and has distinguished himself as an excellent pianist; but on this occasion he has shown that he is not possessed of the genius or attainments of a composer. Every care was bestowed on the performance of this work. The heroine was charmingly personated by the composer's illustrious wife; Boaz was sustained by Santley, and Naomi by Mdme. Patey-Whytock; and the performers exerted themselves to do all justice to their parts. But the result, we regret to repeat, was an entire failure. The remainder of this morning's performance consisted of the "Requiem" of Mozart, admirably sung by Mdlle. Titiens, Miss Julia Elton, Mr. Montem Smith, and Mr. Weiss.

The third miscellaneous concert, on Thursday evening, was a pleasant mélange, and pleased greatly, but its programme did not present the slightest novelty. Friday, the closing day of the festival, was also the greatest. On the morning of that day "The Messiah" was performed to an overflowing audience. Mr. Sims Reeves, who had not hitherto appeared, sang the principal tenor with all his usual vocal power, and was listened to with the profound attention and interest which his efforts never fail to command. Probably his silence during the earlier days of the festival arose, in part, at least, from his desire to reserve himself for this call upon him for the great exertion of all his powers. The other singers in "The Messiah" were Mdme. Lind-Goldschmidt, Mdlle. Titiens, Miss Edith Wynne, Mdme. Patey-Whytock, Mr. Montem Smith, Mr. Weiss, and Mr. Santley. The customary ball at the Shire Hall, on Friday night, brought the festival to a conclusion.

We have to record the death of Mr. William Bartholomew, the eminent friend and coadjutor of Mendelssohn, which took place, on the 18th of this month, at his residence in Brunswick-place. He had been for several years confined to his bed by a malady which deprived him of the use of his limbs; and it was beautiful to witness the resigna-

tion, cheerfulness, and constant activity of mind which he manifested under an affliction apparently so overwhelming.

It must be satisfactory (says the *Morning Post*) to Italian artists visiting and residing in England to find that they are not forgotten in their own country. A striking proof has just been given to that distinguished composer and conductor, Signor Arditi, of the esteem in which he is held in Italy, in the shape of a decoration forwarded to him by King Victor Emmanuel. Signor Arditi has received from his Majesty the cross and insignia of the honourable order of San Maurizio and San Lazzaro.

OBITUARY OF EMINENT PERSONS.

THE DUKE OF NORTHUMBERLAND.

His Grace Sir George Percy, P.C., LL.D., fifth Duke of Northumberland, Earl of Northumberland, Earl Percy, Earl of Beverley, Baron Warkworth, Lord Lovaine, Baron of Alnwick, in the county of Northumberland, and a Baronet, who died on the 21st inst., at his ancestral seat, Alnwick Castle, Northumberland, was the eldest son of Algernon, second Baron Lovaine, of Alnwick, and first Earl of Beverley, by his wife, Isabella Susannah, second daughter of Peter Burrell, Esq., of Beckenham, Kent,

and sister of Peter, first Lord Gwydir, and was grandson of Hugh, first Duke of Northumberland. He was born June 22, 1778, and was educated at St. John's College, Cambridge, where he graduated M.A. in 1799. He was formerly a member of the House of Commons, having represented the family borough of Beeralston from 1806 to 1830. He was a Lord of the Treasury from 1804 to 1807, when he was made a Commissioner for Indian Affairs. He was, in 1842, appointed Captain of the Yeomen of the Guard, and was made a P.C. He succeeded, as third Lord Lovaine and second Earl of Beverley, his father, Oct. 21, 1830; and, as fifth Duke of Northumberland, his cousin, Algernon, the fourth Duke, K.G., Feb. 12, 1865. He married, June 22, 1801, Louisa Harcourt, third daughter of the Hon. James Archibald Stuart Wortley Mackenzie, and granddaughter of the well-known Prime Minister, John, third Earl of Bute, K.G., and by her, who died June 30, 1848, leaves issue three sons and two daughters—viz., Algernon George, his successor; Lord Jocelyn William Percy, who married Margaret, only daughter of Sir David Davidson, Esq., of Cantray, Nairnshire, and widow of Sir Robert Grant; Major-General Lord Henry Hugh Manvers Percy, V.C., M.P. for North Northumberland; Lady Louisa Percy; and Margaret, Lady Hatherton, the wife of Edward Richard, second and present Lord Hatherton. The Duke is succeeded by his eldest son, George Algernon, Earl Percy, P.C., LL.D., now sixth Duke of Northumberland, who was born May 2, 1810, and was educated at St. John's College, Cambridge. He was M.P. for North Northumberland from July, 1852, to July, 1865. He was appointed a Lord of the Admiralty in March, 1858, and subsequently, from February to June, 1859, was Vice-President of the Board of Trade, when he was made a P.C. He was formerly a Captain in the Grenadier Guards. He is a Deputy Lieutenant of Northumberland, and was, in 1862, appointed Lieutenant-Colonel of the Northumberland Militia. He is President of the Life-boat Institution. His Grace married, May 26, 1845, Louisa, elder daughter and coheiress of the late Henry Drummond, Esq., of Albury, Surrey, M.P. for West Surrey, and granddaughter (maternally) of Robert, ninth Earl of Kinnoul, by whom he has issue two sons, Henry George Lord Warkworth (who no doubt now becomes Earl Percy), born May 29, 1846, and Lord Algernon Malcolm Arthur Percy, born Oct. 2, 1851. The history of the very ancient house of Percy, Earls of Northumberland, from whom the modern Dukes of Northumberland maternally descend, may be said to form part of the history of England itself. From their first coming from Normandy with the Conqueror till now, no people have been of more note and position than the Percys of Northumberland, but their deeds and their fame are so numerous and so well known that it would be vain and needless to attempt to give details about them here. Suffice it to say that the modern dukedom of Northumberland began with Sir Hugh Smithson, Bart., who (himself of the ancient blood of the Percys) marrying, in 1740, Lady Elizabeth Seymour, the heiress of the Percys, became a Percy himself by Royal grant, and Earl of Northumberland by limitation, and was created Earl Percy and Duke of Northumberland Oct. 22, 1766. He was grandfather of the Duke just deceased.

LORD POLWARTH.

The Right Hon. Henry Francis Hepburne-Scott, Baron Polwarth, in the Peerage of Scotland, a representative Lord, a Lord in Waiting to the Queen, and Lord Lieutenant and Sheriff Principal of Selkirkshire, who died on the 16th inst., at his seat Mertoun House, St. Boswell's, Berwickshire, was the eldest son of Hugh, Lord Polwarth, by his wife, Harriet Bruhl, Maid of Honour to Caroline of Brunswick, Princess of Wales, on her Royal Highness's marriage, and daughter of Hans Maurice, Count Bruhl, of

Martinekirk, Minister Plenipotentiary of Saxony in England. His Lordship was born Jan. 1, 1800. He succeeded his father Dec. 28, 1841; and was elected a Representative Peer for Scotland in 1843. He was Lieutenant-Colonel of the Roxburghshire Rifle Volunteers, and a Deputy Lieutenant of that county and of Berwickshire. His Lordship was appointed Lord Lieutenant of Selkirkshire in 1845. He was in 1866 made a Lord in Waiting to the Queen, and had previously held that post from February to December, 1852, and in February, 1858. His Lordship was a stanch Conservative in politics, a successful agriculturist, and an excellent country gentleman. His death will be much regretted throughout the Border. Lord Polwarth married, Nov. 11, 1835, Georgina, third daughter of George Baillie, Esq., of Jerviswood, and sister of George, tenth and present Earl of Haddington, and by her, who died at Nice, April 2, 1859, leaves issue two sons and three daughters. His Lordship is succeeded by his elder son, Walter Hugh, now Baron Polwarth, who was born on Nov. 20, 1838. He married, February, 1863, Mary, eldest daughter of Sir George John James Hamilton-Gordon, fifth Earl of Aberdeen, and has a son, the present Master of Polwarth, born on April 9, 1866. The late Lord Polwarth assumed the additional surname of Hepburne in consequence of the estates of the Hepburnes of Humbie having descended to him through Helen Hepburne, Countess of Tarras, his great-great-grandmother. Lord Polwarth was twelfth Baron of Harden, representative of the family of Synton, and twenty-second in lineal male descent from Uchtred Fitz-Scot, who flourished in the reign of David I. of Scotland, and was witness to two charters granted by him to the abbeys of Holyrood and Selkirk in the years 1128 and 1130. By failure of the male heirs of Sir Robert Scott, of Murthockstone (from whom derives the noble house of Buccleuch), the chieftainship of all the Scotts in Scotland devolved on Lord Polwarth, both families being descended from sons of Sir Michael Scot, who was killed in 1346. The male line of the Lords Polwarth is that of the Scotts of Harden, from the first of whom descended Walter Scott, tenth Baron of Harden, who married Lady Diana Hume Campbell, daughter and eventual heiress of Hugh, third Earl of Marchmont, and great-granddaughter of Sir Patrick Hume, eighth Baron of Polwarth, Lord Chancellor of Scotland, created Earl of Marchmont in 1697. The son of Lady Diana and her husband Walter Scott, Baron of Harden, Hugh Scott, claimed and was allowed the barony of Polwarth by Parliament in 1686. He was the father of the peer just deceased.

LADY CATHERINE LONG.

Lady Catherine Long, who died suddenly, on the 20th inst., at her residence, near Farnham, Surrey—her death, consequent on disease of the heart, being accelerated by alarm in a thunderstorm—was the youngest daughter of Horatio, second Earl of Orford, by his first wife, Sophia, daughter of Charles Churchill, Esq., and was great-granddaughter, maternally, of the famous Minister, Sir Robert Walpole, K.G., and aunt of Horatio William, fourth and present Earl of Orford. Her Ladyship was born in 1797, and was known in the literary world as the author of "Sir Roland Ashton, a Tale of the Times." Her Ladyship was married July 26, 1822, to Henry Lawes Long, Esq., of Hampton Lodge, near Farnham, Surrey, and of East Barnet, Herts, J.P., and had issue one son, Henry Charles Dudley, and seven daughters, five of whom have been married—viz., Charlotte Caroline Georgina, married to Henry Howard, Esq., of Greystoke Castle, Cumberland; Emma Sophia, married to Lieutenant-Colonel Francis William Hastings, R.A., Florence Louisa Jane, married to Turner A. Macan, Esq., of Cariff, in the county of Armagh; Sophia Horatia Churchill, married to Major Jervoise Clarke, eldest son of Sir Jervoise Clarke-Jervoise, Bart., M.P., and Isabella Henrietta Theodora, married to Thomas Barnard, Esq., of Cople, Beds. Lady Catherine Long was sister of the late Lady Georgiana Mary Wolff, whose husband, the able and eccentric Palestine Missionary, the Rev. Dr. Wolff, died Vicar of Isle Brewers, Somersetshire, in 1862.

*** In addition to last week's notice of the late Lord Dunkellin, it may be stated that his surviving brother, Lord Hubert de Burgh-Canning, now heir apparent to his father, the Marquis of Clanricarde, assumes the title, not of Lord Dunkellin, dating from 1543, but of VISCOUNT BURKE, a junior family honour, dating from 1629. The title taken by the heir apparent, be it observed, is simply one of courtesy, and, if there are two or more second titles, the heir apparent may call himself by any one of them. It is not by the title that the heir takes rank, but from his position as eldest son. Should Lord Hubert, the only surviving son of the Marquis of Clanricarde, die without issue, before succeeding, the marquisate, at the death without further male issue of the present holder, would become extinct, and the old historic earldom of Clanricarde, dating from the year 1543, would seek an inheritor in whoever was the heir male of Burke of Clanricarde. But the second earldom of Clanricarde, granted in 1800 to the father of the present Marquis, would descend, under a special limitation in the patent, to the Marquis of Sligo. The late Earl of Clanricarde, when he obtained this second patent, had the limitation extended, after the failure of his own male issue, to his daughters, the Marchioness of Sligo and the Countess of Howth and their issue male in succession.

CHESS.

TO CORRESPONDENTS.

G. G., St. Catherine's, Dominion of Canada.—It shall have insertion very shortly.
R. S., Malines.—Your attempted solutions of Problem 1223 are both failures.
BETA, Dalston.—Apply at the office for a sight of the file of papers.
H. FINLINSON.—They must have miscarried or have been mislaid. Perhaps you will send copies of them.
A correspondent who writes about the origin of chess and the old story of the grain of corn should be good enough to give an intelligible signature.
FIDES.—Somewhat complex, but very ingenious. It shall be again examined carefully.
T. P. C.—There appears to be, what we hope there is not, a second solution to your problem, beginning 1. Q to Q B 8th. Is it so?
R. T., Bernard-street, must have odd notions of newspaper arrangements to suppose that we have time to inform every correspondent by post whether his attempted solution is right or wrong. The only solution Problem No. 1213 admits of is that we published.
SOLUTIONS OF PROBLEM No. 1214 (*continued*) by I. E. Vernon, T. U. G., Victor G., Savage, P. P., Imogen, G. W. B., Medicus, Jerry, W. R. R., Sigma, Philo-Caissa, Nimrod, Busy-bee, and Q. E. D. are correct. All others are wrong.
SOLUTIONS OF PROBLEM No 1215 by H. W., of Oxford; W. F. G., of Wokingham; H. Frau, of Lyons; R. R. T., Cherry-pie, Drummer, Charley, Bridlington Quay, Flora, Cary, Manfred and Man Friday, Jessie; R. F., of Woolwich; Rex and Cox, Trincule, F. C. D., Violet, Conrade, G. W. E., Medicus, Lex, Jessica, W. R. R., Boston Stump, Nimrod, Van Dunk, Rajah, S. S., Felix, F. H. Mons, D. C. L., Try-again, M.P., W. F. G., Cosmos, Iota, Philip, Jessamy, W. B. P., W. N., F. C. S., Charley, Phillis, D. C. L., I. E. Vernon, Sans, Quidnunc, Festus, Old Ben, W. R. F., H. K., R. Read, O. B. G., Long Tom, and Mrs. Gamp are correct. All others are wrong.

SOLUTION OF PROBLEM No. 1226.

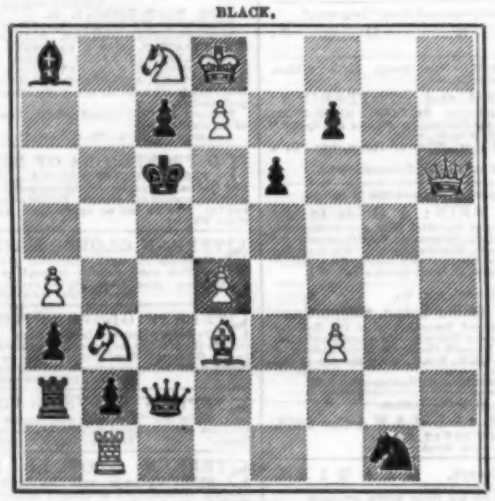
WHITE.	BLACK.	WHITE.	BLACK.
1. B to Q B 4th (ch)	K to Q B 3rd	K 5th, White plays 2. Kt takes Q (ch), 3. P to K B 3rd, and mates next move.)	
(If he play his King to K 4th, then follow 2. Kt to Kt 4th (ch), 3. Q to K 2nd (ch), and 4. Kt takes K P. Mate. If he take the Bishop the mate is given by 2. Q to K 2nd, 3. Q to Q Kt 5th (ch), and 4. Kt takes Q. Mate. Finally, if he move the King to		2. Q to K 8th (ch)	K to Q Kt 2nd
		3. Q to B 8th (ch)	Any move
		4. B or Kt mates.	

PROBLEM NO. 1227.

By Mr. W. S. PAVITT.

A competing Problem in the Paris Tourney of 1867.

BLACK.



WHITE.

White to play, and mate in three moves.

THE EMPEROR'S PRIZE.

The following Game, between Messrs. STEINITZ and GOLMAGO, was played in the Grand Tourney of Paris.—(*Sicilian Opening.*)

WHITE (Mr. S.)	BLACK (Mr. G.)	WHITE (Mr. S.)	BLACK (Mr. G.)
1. P to K 4th	P to Q B 4th	against these triple odds he makes a brave fight, and saves his honour, though he cannot save the game.)	
2. Kt to Q B 3rd	P to K 3rd	30.	K to K 2nd
3. P to K Kt 3rd	Kt to Q B 3rd	31. Kt to K B 4th	K to Q 3rd
4. B to K Kt 2nd	Kt to K B 3rd	32. Kt to Q 3rd	B to Q Kt 6th
5. K Kt to K 2nd	P to Q 4th	33. Kt to Q Kt 2nd	R to Q R 4th
6. P takes P	P takes P	34. P to Q B 4th	R to K R 4th
7. P to Q 4th	P takes P	35. P to K R 4th	P to K Kt 4th
8. K Kt takes P	B to Q Kt 5th	36. K to Q 3rd	P takes P
9. Castles	B takes Kt	37. P to K Kt 4th	
10. „ takes B	Castles	(We have not had time to examine the present game minutely, and hence, probably, we do not see why White declined to win the Bishop at this moment. That there is a valid reason we have no doubt.)	
11. B to K Kt 5th	P to K R 3rd	37.	R to Q R 4th
(Play as he could, after White's last move, Mr. Golmago must have stood at a disadvantage; but it strikes us that the disadvantage would have been less had he moved the Bishop to K 3rd, instead of P to K B 3rd.)		(Here, by playing his Rook to K 4th, Mr. Golmago might at least have delayed the loss of his Bishop.)	
12. B takes Kt	Q takes B	38. K to Q B 3rd	R to K 4th
13. B takes Q P	B to K R 6th	39. K takes B	R to K 6th (ch)
14. R to K sq	Q R to Q sq	40. K to Kt 4th	R takes K B P
15. B takes Kt	P takes B	41. R to Q sq (ch)	K to Q B 2nd
16. Q to K R 5th	B to K 3rd	42. Kt to Q 3rd	R to K Kt 6th
17. Kt takes Q B P	R to Q B sq	43. Kt to K 5th	P to K B 3rd
18. Kt to Q 4th	R takes P	44. Kt to Q 7th	P to K R 6th
19. Q to K 5th	Q takes Q	45. Kt takes K B P	P to K R 7th
20. R takes Q	R to Q sq	46. R to K R sq	R to K Kt 7th
21. R to K 3rd	R to Q B 5th	47. Kt to Q 5th (ch)	K to Q B 3rd
22. P to Q B 3rd	K R to Q B sq	48. Kt to K 3rd	R to K Kt 6th
23. Kt to K 2nd	Q R to Q R 5th	49. Kt to K B 5th	R to K R 6th
24. P to Q R 3rd	K R to Q Kt sq	50. P to Q R 4th	P to Q R 4th (ch)
25. Kt to Q 4th	B to K R 6th	51. K takes P	K to Q B 4th
(Threatening to win the Q R Pawn.)		52. K to Q R 6th	P to K B 4th
26. P to K B 3rd	R to Q Kt 7th	53. P to K Kt 5th	R to K B 6th
27. R to K 2nd	R takes R	54. Kt to Kt 7th	R to Q R 6th
28. Kt takes R	K to B sq	55. K to R 5th	R to K R 6th
29. K to B 2nd	B to K 3rd	56. Kt to K 6th (ch)	K takes Q B P
30. K to K 3rd		57. P to Kt 6th	R to K Kt 6th
(Mr. Golmago has now three things to contend against, any one of which is almost enough to decide the day against him—a better player, an inferior position, and a pawn less than his adversary has. Still,		58. P to Kt 7th	R to K Kt 7th
		59. R takes K R P	

and Black resigns.

Lord Strathnairn and Mr. Edward Romilly (late chairman of the Board of Audit) have become vice-presidents of the proposed civil service college. Contributions are now flowing in from members of both Houses of the Legislature and friends of the Civil Service generally. Amongst the former may be mentioned a donation of £100 from Admiral the Earl of Egmont.

Salmon net-fishing in the Tay and its tributaries is closed for the present season. With the rains of the past few days the Tay and Earn may be expected to rise above their present low level; and, as there are very large numbers of fish in these rivers, anglers anticipate good sport till the close of rod-fishing, on Oct. 10. At the close of the net-fishing the prices of salmon have been seldom so high as they now are. The prices are—salmon, 1s. 4d. per lb.; grilse, 1s. 9d.; trout, 1s.

Archæology of the Month.

THE restoration of the ancient Norman Church of St. Bartholomew the Great, Smithfield—there is no church like it in the city of London or the county of Middlesex—we regret to see is at a standstill for want of funds. "It is painful to confess that, notwithstanding an outlay of £5000, the restoration fund is nearly £1500 in debt, and that there appears little prospect of completing so desirable a work without the assistance of the generous and wealthy." Such is the official statement. The chairman, Mr. Tite, M.P., has given the princely sum of 1000 gs.; and the worthy Rector and Treasurer have contributed a like munificent sum. Those most nearly connected with the parish have some doubled, and others much more than doubled, their original amounts. The Corporation have given 200 gs. and some few Companies have contributed liberally; while the smaller amounts show the interest taken by the parishioners in the good work. Yet we miss the wealthy patrons of art and the merchant princes, which is the more remarkable at a moment when hundreds of thousands of pounds are being expended in the architectural embellishment of the metropolis. Nor do we find a single Royal donation in the list. The past has been a season of lavish festivity and cost, yet here are the good citizens left with comparatively small sympathy in this great undertaking.

Mr. Lilly has just issued, in a handsomely-printed volume, "A Collection of Seventy-Nine 'Old Black-letter Ballads and Broadsides,'" printed in the reign of Queen Elizabeth, and reprinted from the celebrated folio volume formerly in the library of Mr. Daniel, of Canonbury, for which Mr. Lilly lately paid 750 gs. The reprint is accompanied with an introduction and illustrated notes. A catalogue raisonnée of these ballads has appeared in our Journal. To the collection seven have been added.

The Congresses of the Archæological Institute at Hull, and the British Archæological Association at Hull, have proved pleasant and profitable meetings. Among the places visited by the Institute at Hull was Wilberforce House, formerly the residence of Sir John Lister, who entertained King Charles I. The room in which Wilberforce was born was the principal point of attraction. The archæology of the district was ably explored in the excursions; and the recent discoveries on the Wolds and in the East Riding contributed to the museum a profusion of objects illustrative of the British and Roman periods. Most important was a fine collection of flint and stone weapons and utensils, from tumuli in the East Riding, comprising hammers, axe-hammers, arrow-heads, stones for hand-grinding, knives, and missiles. The good old town of Ludlow presented a more attractive field for the Association: the scene of Milton's "Comus" and Sir Philip Sidney's connection with Ludlow Castle gave a poetic zest. Among the papers read was Mr. Thomas Wright's on "The Churchwarden Accounts," in which he illustrated the early history of pews, thought to date from the Reformation, but in the Ludlow books they date from the year 1540; and he has another proof of the antiquity of the use of the pew. In the English "Mort d'Arthure" of Sir Thomas Malory, printed by Caxton, one of the purest of the heroes, Galahad, arrived at a monastery, and, says the text, "On the morn he heard his masse, and in the monastery he fonde a preeste redy at the aultar, and on the ryght syde he sawe a *pewe* closyd with yron." This, no doubt, was a closed pew. Mr. Wright is inclined to think the word "pewe" is not of foreign origin, but that it has been some English word of popular formation. The paramount attraction of the meeting was Wroxeter, the exploration of which may, we trust, be productive of the furtherance of these very interesting researches. At one of the sittings of the Congress was announced the discovery, in a field at Broadwood Hall, Craighton, near Leintwardine, a mass of spear-heads and a piece of pottery, at a depth of 7 ft. from the surface; and at the same sitting Mr. Dillon Croker read a paper on Milton's "Comus," and expressed an opinion that the poet had never visited Ludlow, an opinion which was indorsed by the chairman, Mr. Wright, who said also that Mr. David Masson coincided with it.

The Cumberland and Westmoriand Archæological Society, at their recent meeting, visited Tanwath Hall, and, by permission of Lord Lonsdale, inspected its ancient apartments; an explanatory paper was read on the spot by Dr. M. Taylor. The company then proceeded to Brougham Hall and on to Brougham Castle.

The Kent Archæological Society lately held their annual meeting at Dartford, where they inspected the church, attributed by Dunkin, the historian of Kent, to the Saxon period, but in which there is abundance of work contemporary with Gundulph, the architect of Rochester Castle. The tomb of Spilman, the Elizabethan papermaker, at Dartford, restored a few years since, was doubtless appreciated by the archæologists. Amongst other objects of interest in Dartford are some curious panel-paintings in the old Bull Inn. Some remarkable caves were visited in the plateau between the rivers Cray and Derwent, which Dunkin describes as the city of Cassivelaunus, or Caswallon, whither Cæsar marched on his second invasion of Kent, and where the Romans were defeated. The archæologists then proceeded to the village of Stone and viewed the church lately restored by Mr. Street, architect. Mr. F. Spurrell read to the society a highly suggestive paper upon the early caves in the neighbourhood, known by the names of "wells," "chalk-holes" or "chalk-wells," "cormel," "swallow," and "dene" or "Dane holes." The paper is not within our compass, but we may mention that it referred to Dr. Plot's account of the traditional "King Cunobelino's gold mines" in the cave-field of East Chadwell.

The Sussex Archæological Society met at Midhurst on the 8th inst., where the church was inspected, and Mr. Durrant Cooper read an interesting paper on "The Lords of Midhurst and its Inhabitants." Cowdray was next visited, where Sir Sibbald Scott consented to act as cicerone. The ruins were thrown open by Lord Egmont, the present proprietor; and his Lordship, to show more distinctly the delicate tracery of the stonework of the windows, had given orders for the ivy to be cut away which enveloped the ruins. The grounds and town, the village of Eastbourne, and the priory were visited. The society have just published the nineteenth volume of their *Collections*, which is excellent in matter and artistic in illustration; and we are happy to learn that the prosperity of the Sussex Archæologicals during the past year has suffered no diminution. The society is certainly one of the healthiest associations of its class.

In the recent annual excursion of the Surrey Archæological Society West Horsley Church was visited, when Mr. W. H. Hart gave some account of the registers, and mentioned the startling fact that, in overhauling an old cupboard a few minutes before, and alighting upon some ancient records of great interest, the sexton coolly informed him that there would have been more had he not from time to time used them as occasion required, to *light the fires* in the church! Many interesting parochial records were handed round to the company by Mr. Hart: they date from 1694.

A vote of £15,000 for adapting of Burlington House to the use of certain learned societies has silently passed the House of Commons. The removal of the Piccadilly wall has been commenced. What is to become of the grand Doric colonnade, "borrowed from a palace, by Palladio, at Vicenza?" We conclude that in the above adaptation the Society of Antiquaries will be provided for in "Burlington's fair palace."

Cinerary urns have just been found at Wavertree, similar to those from the Derbyshire grave-hills and elsewhere. These urns are sunburnt, not made by the potter's wheel; they are discoloured by smoke, as if burning matter had been put into them. Other finds of a like order in barrows and grave-hills of pre-Roman and pre-Saxon origin led Mr. Vale, of Liverpool, architect, to remark that elevated sites were usually selected by the pre-historic races who inhabited this island for their interments; and the existence of Druid stones at Calderstones, upon which Sir J. Y. Simpson reports the indications of emblematic circles, and the finding of these urns at Wavertree, prove that this district of Lancashire was inhabited ages before the arrival of the Roman legions upon our shores. In these ancient barrows the British interments are frequently found underneath those of the Saxons, leading one to suppose that the places of burial were consecrated, probably, thousands of years ago "by the priests of a religion which has reached us only in those mysterious incised emblems which are at present exciting the attention of our best archæologists."

THE LONDON GAZETTE.

FRIDAY, AUGUST 23.

BANKRUPTCIES ANNULLED.

Cook, Richard Philip, jun., High-street, Southwark, jeweller.
Steele, George, Birkenhead, greengrocer.

BANKRUPTS.

To Surrender in London.

Allen, Richard, Stoke, Kent, baker.
Baker, John, Stonefield, near Woodstock, publican.
Blenkarn, John, Southwark Bridge-road, Surrey, business agent.
Bodley, J. N., Avenue-road, Camberwell, carpenter.
Brown, Richard, Clapham-park-road, coach builder.
Caswell, R., Charterhouse-lane, commission agent.
Cheetham, Francis George, Hannibal-row, Mile-end.
Clements, H. G., North-street, Rodney-road, Walworth.
Copper, J. E., Princes-road, Plumstead, builder.
Daw, William, Hitchin, bootmaker.
Flint, John, Lewisham, builder.
Frost, Thomas, Wellington-road, Holloway.
Gosling, William, Hadley, Barnet, butcher.
Gregory, Thomas, Ronerton-street, Caledonian-road, baker.
Harman, William, Gravesend, baker.
Hart, George, Leadenhall Market and Bow-common-lane, butcher.
Harvell, Thomas J., Deptford, superannuated police-constable.
Heil, W. J., Wellington-street, Deptford, baker.
Hicks, Robert, Little Albany-street.
Howick, John, Brighton, foreman to a builder.
Jenkins, G. W., Torrington-place, Finchley, builder.
Jenner, J. P., Lower Lisson-street, Lisson-grove, vocalist.
Johnson, John, Auckland-road, Victoria Park-road.
Jones, Thomas E., North-buildings, Finsbury-circus, dealer in silk.
Lockwood, F. R., Gray's-inn-rd., and Chelsea, auctioneer.
Mills, W. H., Lewisham, Kent, carrier's clerk.
Musrave, Elizabeth, Upper Bedford-place, Russell-square.
Notting, Richard, City-road, clerk in her Majesty's Money Order Office, St. Martin's-le-Grand.
Nicholas, W., Artillery-row and Page-st., Westminst., coachbuilder.
Pearce, W., Goswell-rd. and Central-st., St. Luke's, general dealer.
Poole, J. T., Newington-butts, broker.
Punchard, Charles, Haverhill, Suffolk, merchant.
Rivers, J., Dean-street, St. George's-in-the-East, beer-retailer.
Rogers, George, sen., Queen's-row, Mile-end, builder.
Saunders, Joseph, Kilburn, coffee-house keeper.
Sherrin, George, Croydon, tailor.
Smith, W., Green-ter., Clerkenwell, gold-chain manufacturer.
Smith, H. B., Wycombe-terrace, Hornsey-road, grocer.
Smith, Charles John, Essex-road Islington, builder.
Tydeman, Joseph Chipping Ongar, coal agent.
Vendeen, John, Albion-road, Hammersmith, carpenter.
Webb, William, Homer-road, Hackney-wick, grocer.
Wilkher, John, Queen's-road, Bayswater, coachsmith.

To Surrender in the Country.

Beaumont, Joseph, Rawmarsh, miner.
Belse, Thomas, Field Aston, Salop, shoemaker.
Bromley, Thomas Bailey, Southport, Lancashire.
Burke, Michael, Liverpool, white cooper.
Carney, James, Hulme, near Manchester, hawker.
Clarke, Joseph, Nottingham, lace-designer.
Clay, Jane, Rotherwas, Leicestershire.
Cooper, Hannah, Measborough, Derbyshire, publican.
Corrie, Robert, Bradbury, Cheshire, publican.
Davis, Walter, Aston, Warwickshire, factor.
Ditchfield, sen., G. P., Saxcombe, clerk in Gen. Post Office, Liverpool.
Dowler, John, Liverpool, seaveyor.
Edwards, James, Liverpool.
Foulkes, John, Liverpool, warehouse porter.
Frost, John Thomas, Newton Abbot, innkeeper.
Godrich, Thomas, Leicester, coalwaiter.
Griffiths, Mary, Yeadley, Flintshire, grocer.
Griffiths, James L., Liverpool, glassdealer.
Hare, Maria, Fareham Royal, licensed victualler.
Hargrave, John, Newark-on-Trent, ironmoulder.
Helm, J. C. Liverpool, dealer in waterlocks.
Henley, Joseph Willey, Hall, bootmaker.
Hope, John, Darlington, tourhouse-keeper.
Hough, Alfred James, Christchurch, Southampton, stationer.
Illingworth, A., Manchester, commission agent.
Jackson, David, Leicester, leather-dresser.
Jackson, W. E., Oldham, cotton-dealer.
Jenkins, Thomas, Eglwyllan, Glamorganshire, boatman.
Johnson, Richard, Hereford, tailor.
Keating, John, Carlisle, innkeeper.
King, William, Kirby, Yorkshire, innkeeper.
Kirk, E., Shipston-on-Stour, innkeeper.
Lawson, John, Low Coniscliffe, near Darlington, farm bailiff.
Lee, Samuel, Fowey, ropemaker.
Marsh, Samuel, Clifton, near Nottingham, mineral agent.
Mellor, E. Ann, Manchester, upholsterer.
Mitchelson, John, Quebec, near Esh, Durham, butcher.
Osmond, Edward Henry, Moriestown, Devonshire, oilman.
Oswald, George H., Bolton-le-Hole, bootmaker.
Palliser, W., Winlaton, Durham, papermaker.
Perry, William Redditch, Gravelerns, builder.
Portsmuth, George, Worcester, working jeweller.
Powell, Ann, Bonghrood, Radnorshire, housekeeper.
Roberts, William, Seacombe, grocer.
Shaw, John, jun., Manchester, house-painter.
Shard, Samuel, Batley, cotton-waste dealer.
Shillinglaw, Henry, Birkenhead, painter.
Standley, Thomas, Northampton, gasfitter.
Steele, George, Birkenhead, greengrocer.
Strachan, John, Morpeth, watchmaker.
Thomas, Thomas Hancock, Middlesborough, innkeeper.
Thomas, Thomas, Llantrisant, licensed victualler.
Townsend, John, Prescleston, Lancashire, farmer.
Wade, George, Rose, lessee of turnpike tolls.
Whitby, William, Nottingham, cattle-dealer.
White, George H., Southampton, merchant's clerk.
Williams, Thomas, Tipton, ecalmaker.
Wilson, John, Penrys, gardener.
Woodworth, Thomas, Birkenhead, bootmaker.
Young, William, Manchester, stay manufacturer.

TUESDAY, AUG. 27.

BANKRUPTCY ANNULLED.

Nell, Robert, Hamilton-terrace, St. John's-wood.

BANKRUPTS.

To Surrender in London.

Andrews, J. R., Lower Shadwell, licensed victualler.
Austen, Joseph, Barnet-common, Chipping Barnet, bricklayer.
Ball, G. Y., Spencer-street, Goswell-road, commission agent.
Blythe, F. E., Ashburnham-grove, Greenwich, commission agent.
Butler, T. D., Market-st., Caledonian-rd., Islington, bookkeeper.
Casket, J., Caversham-street, Chelsea, billiard-marker.
Coombe, E., Greece-street, Baithbone-place, builder.
Curel, J. F., Cross-street, Walworth-road, gasfitter.
Dallison, J., Westmoreland-place, City-road, builder.
Dodge, John, Little Portland-street, Marylebone, conchirimaster.
Eldridge, W., Uxbridge-st., Uxbridge, Middlesex, Battersea, builder.
Ferris, R., Blenheim-passage, Abbey-rd., St. John's-wood, plumber.
Harris, Sidney San, Upper-street, Islington, auctioneer.
Heyhoe, James Henry's-place, Cherry Orchard-road, East Croydon.
Hubbard, H., Harp-alley, Farringdon-street, baker.
Ingmire, William Frederick, Kent, grocer.
Jackson, F., Oakley-place, Hackney-road, chair manufacturer.
Joyce, J., Murray-street, Hoxton, carpenter.
Lee, G. H., Russell-road, Seven Sisters'-road, provision merchant.
Lyons, Jane, Red Lion-court, general clothier.
Myers, W., Fore-street, Limehouse, lightercman.
Nash, M. A., Oxford-market, Oxford-street, housekeeper.
Newman, Thomas, East-end, Finchley, tailor.
North, Joseph, Neville-terrace, Hornsey-road, grocer.
Tremberry, T., Union-street, Great Marylebone-street, tailor.
Page, Philip Norris, Albert-grove, Peckham.
Pinchback, H. J., Osborne-street, ginger-beer manufacturer.
Reed, Richard, jun., Tottenham-c. rect, master builder.
Riccincoli, Charles Ladislaus, Regent-street, lodging-house keeper.
Smith, Charles, Blue Anchor-yard, Bermondsey, tavern-keeper.
Steele, John, High-street, Poular, retailer of beer.
Sumner, W., Park-road, Peckham, furniture-dealer.
Walker, G. C., Great Castle-street, Oxford-street.
Willard, S. H., St. Leonards, ironmonger.
Wrotland, James, New Church-st., Edgware-road, cheesemonger.
Yell, Mary, Elgin-crescent, Notting-hill, lodging-house keeper.

To Surrender in the Country.

Beguley, T., Manchester, metal-maker.
Barrett, Barnabas, Norwich, sculptor.
Bearpark, Charles, Kingston-on-Hull, tailor.
Bell, Isaac, Leeds, butcher.
Bird, Henry, Liverpool, licensed victualler.
Booker, Joseph, Sheffield, spring-knife manufacturer.
Broughton, Richard, Middlesborough, furniture-broker.
Brown, Jonathan Wilks, Scarborough, hotel-keeper.
Capo, Thomas Hollis, Harborne, Staffordshire, and Birmingham.
Cooper, Sandford A., Stafford, ironmonger.
Cunningham, Peter, Northwich, Cheshire, publican.
Davies, Charles, Congleton, Cheshire, innkeeper.
Edmonds, George, Liverpool, commission agent.
Enoch, D. J., South Stockton, Yorkshire, contractor.
Harrison, David, Stratfield Mortimer, Berkshire, carpenter.
Hull, William, Berwick-upon-Tweed, shipowner.
Love, James, Burghfield, Berkshire, blacksmith.
Mason, Frank Goodwin, Birmingham, coal merchant.
Maudsley, William, Sudden Brow, Rochdale, loom-jobber.
Morgans, John, Worcester, carpenter.
Needles, John, Uplowman, Devonshire, bootmaker.
Partland, James, Gateshead, builder.
Paice, William and Michael, Stratford-upon-Avon, newsagents.
Perry, John, Brierly-hill, Staffordshire, pawnbroker.
Sarell, Francis, Exeter, brewer.
Seagrave, William, Arundel, dealer in China.
Summers, William, Southampton, carver.
Tierney, John, Liverpool, cattle-dealer.
Tranbeath, Samuel, Lymington, baker.
Torbett, James William, York, clerk.
Turner, John, Alnwick, agricultural implement manufacturer.
Walters, Joseph, Alfreton, Derbyshire, auctioneer.
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REPORTS ON THE CLASSES.

PREPARED BY ORDER OF THE COMMITTEE OF COUNCIL ON EDUCATION.

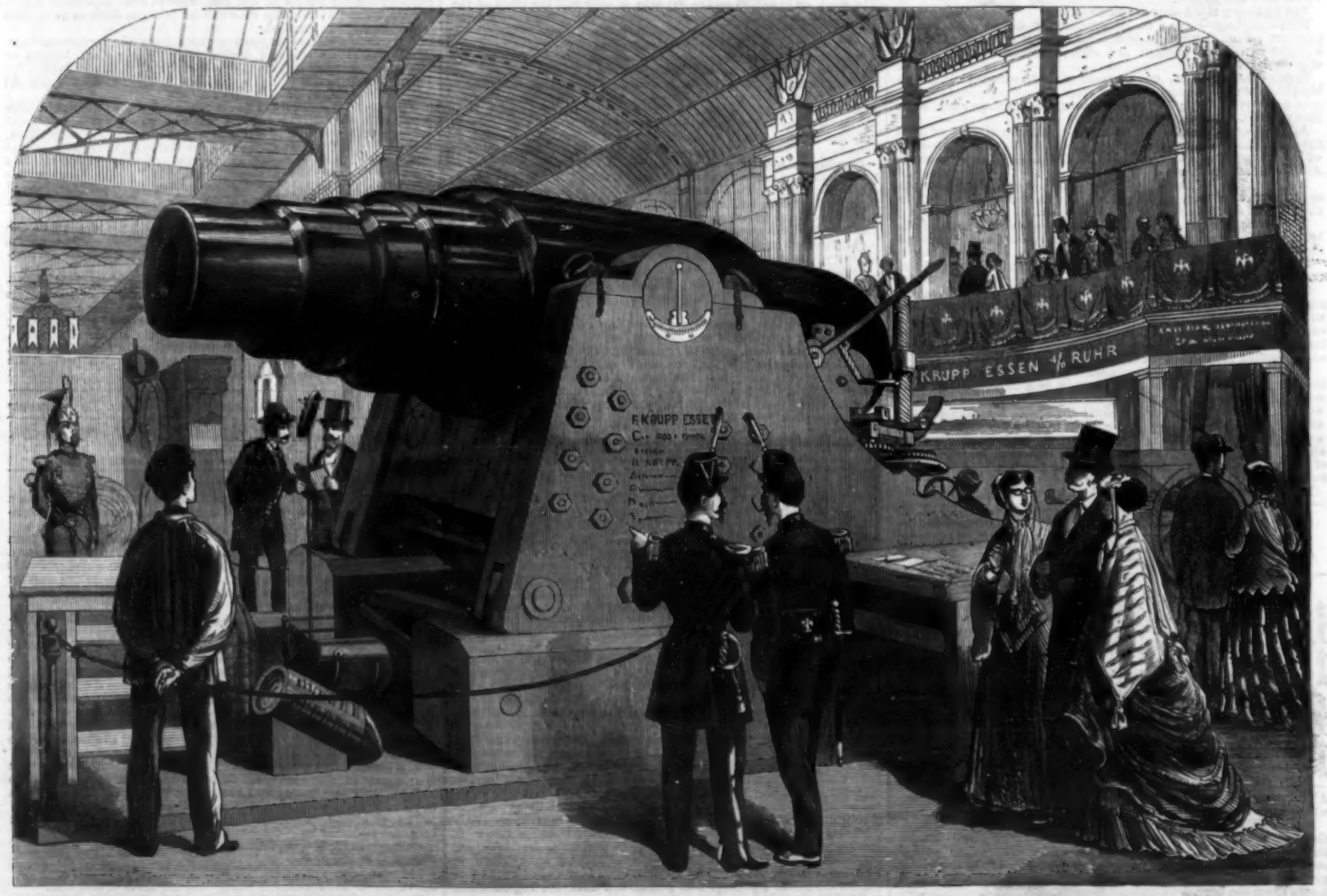
ARTILLERY.

BY LIEUT.-COLONEL C. H. OWEN, R.A., PROFESSOR OF ARTILLERY R. M. COLLEGE, WOOLWICH.

In the Great Exhibition of 1851 the display of military weapons was small, and again in the Paris Exhibition of 1855 the same deficiency was observed, the French and Belgian Governments being almost the only exhibitors of ordnance. In the London Exhibition of 1862 artillery matériel was, however, fully represented, showing that much attention had been given in the interval between this and the last Exhibition to the manufacture of ordnance. The development of this and other branches of military manufactures was doubtless owing, in a great measure, to the Crimean War, which gave a rude shock to the prevailing idea of the future peaceful career of the world's progress, and, proving that disputes would still be sometimes decided by force of arms, showed clearly that the cultivation of the military arts could not be neglected with impunity.

It is only in actual warfare that the practical excellence of new weapons can be satisfactorily tested, and in times of peace there is little inducement for private enterprise to engage in military manufactures, the Government arsenals being fully competent to provide the guns and stores required for the service. During the last few years, however, so many gigantic struggles have rapidly succeeded each other, all clearly demonstrating the advantages secured by superior armaments, that much private capital and ingenuity have found ample employment, both in this country and abroad, in all branches of military manufactures.

For some time previous to the Crimean War but little interest was taken in military questions; nevertheless, several important improvements in arms had been introduced during the long European peace,



KRUPP'S GREAT GUN, PRESENTED TO THE KING OF PRUSSIA BY THE MANUFACTURER, M. KRUPP, OF ESSEN.—SEE PAGE 239.

especially in the few years preceding the Great Exhibition. The adoption of shell-guns, and the consequent development of horizontal shell-fire—the destructive effects of which were so clearly pointed out by General Paixhans, and practically demonstrated at Sinope and Sebastopol—was a most important advance in the science of attack, and eventually led to the adoption of iron armour as a protection to vessels of war. The advantages of rifling, and the substitution of elongated for spherical projectiles, had been proposed in the middle of the last century by the celebrated Benjamin Robins; but, although rifled muskets have now been long in use, elongated projectiles were only adopted, for the first time (by the French), about five years previous to the Great Exhibition. Two years later the Prussians introduced the needle-gun, which has lately become so famous; and about this time the question of rifled ordnance assumed a practical shape, rifled breech-loading guns being proposed by Major Cavalli, of the Sardinian artillery, and by Baron Warendorff, a Swedish nobleman, and which were tried in England and abroad.

It would, then, appear that military manufactures, although in a depressed state, had still been making some progress; and when the great European Powers determined upon the Crimean War, the weapons with which both land and naval forces were supplied were much superior to those used in the wars at the beginning of this century. The British Army was almost entirely armed with rifled muskets, and many of the French, Russian, and other troops had also a fair proportion of them. The artillery used on both sides, with the exception of a few Lancaster rifled guns belonging to the English, was composed of smooth-bored pieces of cast iron or bronze; but the calibres had been much increased since the Peninsular War, 8-inch and 32-pounders having taken the place of 24 and 18 pounders; and 10-inch and 68-pounders, then thought enormous pieces, having been procured from the fleets. The improvement of rifled ordnance has since been the constant object of all the great Powers; but the difficulties attending the application of rifling to ordnance are very great, both as regards the efficient service and the necessary strength of a gun; and these difficulties have been much increased of late by the demand for ordnance of very large calibre to throw heavy projectiles with high velocities. The strain upon the metal in rifled guns being much greater in proportion to the weight of projectile and charge fired than in smooth-bored pieces, the charges of the former are less than those of the latter, being only from one tenth to one sixth the weight of the projectile, instead of one fourth to one third; and it must be remembered that as the calibre of a gun is increased, so greater difficulty is experienced in obtaining a sound construction.

The recent changes in the materials employed for ordnance, carriages, and projectiles, as well as the increased size and weight of the guns and their appliances, may be observed in the present Exhibition. In 1862, with the exception of a Blakeley 200-pounder and the Alfred gun exhibited by the Mersey Steel and Iron Company, no piece was shown for a projectile over 100 lb. in weight.* Several 9-in. guns, which fire shot of 250 lb., with a charge of 43 lb., are now exhibited; a 600-pounder and a 1000-pounder are also shown; but the latter has not yet been fired, and can therefore only be accepted at present as a specimen of manufacture. It will be noticed that wrought iron and steel have replaced, to a great extent, cast iron and bronze, although the two latter are still employed for smooth-bored guns, and bronze for rifled pieces of small calibre. There are a few cast-iron rifled guns strengthened with steel hoops. Wrought iron has taken the place of wood for many gun-carriages; and steel or chilled iron has replaced cast iron for projectiles for special purposes, such as the penetration of armour-plates.

ENGLAND.—WAR OFFICE EXHIBITION.

It is to be regretted that the British Government are again alone in sending a complete supply of munitions of war; but, this being the case, it will be better to take the War Department annexe first, and give a brief description of its contents, which, it is generally acknowledged, reflect so much credit upon the manufacturing departments of the Royal Arsenal at Woolwich. Here everything has been admirably arranged, the guns being mounted on their respective carriages, and platforms or slides, with ammunition and side-arms complete. Few visitors probably think of the time and labour that have been expended in placing all the different objects, especially the heavy guns and carriages, in the perfect order in which they now appear.

The following rifled guns are exhibited:—

Muzzle-loading.—12-in., on wrought-iron casemate carriage and platform; 9-in., on wrought-iron naval carriage and slide; 7-in., on wrought-iron naval carriage and slide; 64-pounder, on wooden ship carriage.

Breech-loading.—7 in., on casemate sliding-carriage and traversing-platform; 64-pounder (wedge) siege travelling-carriage; 40-pounder (screw), ditto; 12-pounder (screw) field-carriage; 9-pounder (screw) ditto. Wooden carriages.

All the above guns are built upon the Armstrong method of construction except the muzzle-loading 64-pounder, the manufacture of which is a modification of the former. The essential features of the Armstrong method are:—

1. The disposal of the fibre of the metal round the bore by coiling, so as to resist the tangential strain, the welds running in the direction of least strain as regards their separation.

2. The employment of a breech-piece to support the bottom of the bore, with the fibre running lengthwise, so as to resist longitudinal strain.

3. The shrinking on the different portions, so that the exterior of the gun may take a due share of strain.

The inner barrels of the 12-in., 9-in., and 7-in. muzzle-loading guns are of tempered steel, with solid ends; these are strengthened with wrought-iron coils shrunk on; the trunnion-ring, breech-piece, and escabel, which is screwed into the latter, are solid wrought-iron forgings. The different parts are hooked together by shoulders and corresponding recesses, to prevent their separation.

The muzzle-loader 64-pounder is made on Fraser's cheap-construction plan, and consists simply of a coiled iron tube, of which the muzzle part is double, but with a triple coil over the breech, these with the trunnion-ring being welded together. By reducing the number of parts and employing a cheaper iron for the outer portion a considerable saving in expense is effected, the separation of the different parts being prevented by welding instead of by the tension of shrinkage and the use of projections and recesses, as in the 7-in., 9-in., and 12-in. guns.

The following table gives the weights, &c., of the rifled guns:—

	Gun.	Weight of Gun.	Length of Gun.	Rifling. No. of Grooves.	Rifling. Twist.	Charges. Battering.	Charges. Service.	Projectile. Weight.	Projectile. Bursting Charge-shell.
		Tons.	Inches		Calo.	lbs.	lbs.	lbs.	lbs.
Muzzle-loading.	12 in...	23	171	9	1 in 100 to 1 in 30	70	..	600	—
	9 in...	12	147	6	0 to 1 in 45	43	30	250	18
	7 in...	6½	135	3	1 in 35	22	14	115	8¼
	64-pndr.	Cwt. 64	111	3	1 in 40	..	8	64	4½
Breech-loading.	7 in...	82	120	76	1 in 37	..	11	90	6½
	64-pndr.	61	110	70	1 in 40	..	8	64	4½
	40-pndr.	35	121	56	1 in 26½	..	5	40	2½
	12-pndr.	8	72	28	1 in 38	..	1¼	12	¾
	9-pndr.	6	62	28	1 in 38	..	1¼	9	¾

All these guns have preponderance, except the 12-in. and 9-in., which have none.

The 12-in., 9-in., and 7-in. guns are rifled on the Woolwich system, the grooves of the two first having an increasing twist, but those of the 7-in. a uniform twist. By using an increasing twist, the *initial strain* upon the gun is much reduced, the rotatory motion not being given when the shot is put in motion, but gradually acquired as it moves down the bore.

* A 110-pounder Armstrong gun was sent, but the projectile has since been reduced to less than 100 lb.

The projectiles have two rows of gun-metal studs to fit the grooves, the edges of which are rounded off, as seen in the section (fig. 2.) Sharp angles in a groove are objectionable, as the gas enters them and causes fissures. The buttons of the 7-in. projectile are all of the same size; but the front studs of the 12-in. and 9-in. projectiles are smaller than the hind ones, to suit the constantly varying angle of the increasing twist.

The muzzle-loading 64-pounder is rifled on Sir W. Armstrong's *shunt* system. The depth of each groove on the *driving* side is decreased near the muzzle, an incline leading up from the bottom of the groove to the shallower portion. The groove is also very wide at the muzzle, but contracted at some distance down the bore, below the bottom of the incline. The studs, which are of copper, fit easily into the broad and deep part of the groove at the muzzle.

When a projectile passes down the bore of a rifled gun from the muzzle, its studs press against one side of the grooves; but on being forced out by the gas, they press against the other side. When the shunt gun is loaded, each stud presses against the side, A B, of a groove, and so runs easily home, being shunted on its way down into the narrow portion of the groove, but on coming out again it presses against the (driving) side C D, and near the muzzle rises up the incline into the shallow part or on to the high level, and so is slightly compressed; the projectile therefore leaves the bore fitting tightly and with its axis stable, or is what is termed "centred."

The breech-loading guns have all the same polygonal system of rifling, with lead-coated projectiles, the lead being attached by means of zinc. With these or similar projectiles, such as the Prussian, the bore of a gun is not scored by the rush of gas over the top of the shot, as is the case in rifled pieces having windage. The form of the groove is shown in fig. 6.

The screw breech-loading arrangement will be readily understood by reference to fig. 7. The breech-screw, which is tightened or released by the lever and tappet rings, secures the vent-piece, and thus closes the bore. The vent-piece is lifted out previous to loading, the projectile, lubricator, and charge being inserted from the rear through the breech-screw. The vent-piece, except in the 7-inch gun, is faced with copper, which fits against a copper ring in the bottom of the bore. The 7-inch gun is fired with a tin cup behind the cartridge, to prevent the escape of gas, the vent-piece having no copper face, but a wrought-iron ring being screwed into the bottom of the bore.

The wedge breech-loading arrangement will be understood by reference to figs. 8 and 9.

To load: Cover the vent with the slide plate by which the locking-pin is raised up out of the recess in wedge and hammer; loosen and push wedge out by the hammer; force back the handle of stopper to withdraw the face from the bore, and then pull the stopper out to the side; the shot and cartridge can now be inserted, and the tin cup placed on the pin in the centre of the face of the stopper before the latter is replaced; the wedge is not pushed aside clear of the bore, for its end is hollowed out so that the shot can be loaded through it; the line *a*, *b* (fig. 8) shows where the hollow commences when loading, and *a* 2 *b* 2 the same when firing. After the wedge has been replaced it must be tightened by a smart blow with the hammer; return the latter into the slot and draw the slide plate from the vent.

Both the screw and wedge breech-loading systems were designed by Sir W. Armstrong.

The iron carriages for the heavy guns consist of two brackets and a transom made of plate iron riveted to angle-iron, a bottom plate, four flanged feet with gun-metal trucks, elevating gear, and compressor. There is no elevating screw, but the breech of the gun is fitted on each side with a segmental arc, which is worked up or down by a pinion-wheel upon a spindle passing through the bracket; on each spindle, outside the bracket, is a drum, having a number of holes to receive the point of a lever employed to turn the pinion-wheel. The drum and pinion can be clamped against the bracket, to preserve the elevation.

The compressor (Sir W. Armstrong's) consists of a number of iron plates suspended through the bottom of the carriage and fitting between others in the platform or slide; on each side of the plates is a rocking lever, the lower arm of which bears against the outer plate, and on the upper arm is a nut to receive the screw-shaft, which, passing through the bracket, is worked by a lever-handle. The screw on the shaft on the left side is only half the pitch of the other, and is termed the regulator-screw; the other is called the compressor-screw. The compression is thus given:—The lever handle of the regulator-screw is forced down through an arc corresponding to the amount of compression required, and then secured by a keep-pin passing through the handle and into one of the holes in a metal arc attached to the bracket. The compressor-screw is always pressed down through the whole arc, so that the plates are jammed against the rocking lever of the regulator-screw. It is obvious that by securing the lever-handle of the regulator-screw at different distances on the arc the amount of compression may be varied.

Should the gunner omit to press down the handle of the compressor-screw, a metal tripper attached to the platform or slide will catch the short arm of the handle and force the handle down through the whole arc. The arrangement is thus self-acting.

Models of the 68-pounder on a naval slide, the 9-pounder bronze gun on a field carriage, and of two 24-pounders (of the eighteenth century) on siege carriages are exhibited. Also complete sets of the harness used in the service.

To illustrate the Fraser method of manufacture for heavy ordnance an enormous unwelded tripple coil, and a breech-coil and trunnion-piece forged hollow, welded together, and turned, both for a 25-ton gun, are shown.

A 10-in. cast iron mortar, on a travelling carriage, is exhibited. By removing the wheels the carriage serves as a bed. A forge waggon is also shown. Shafts are employed in the British service, in preference to the pole, for the draught of artillery carriages, their chief advantage being that the carriage is more under control for manœuvring or turning. The pole is generally in use on the Continent. The wheels in the British service have streak tires.

A large glass case contains specimens of all the ammunition manufactured in the Royal Laboratory at Woolwich, the shells, fuses, &c., are shown both whole and in section. The spherical projectiles are round and case shot; common, mortar, Martin, and diaphragm shell; carcases, parachute lights, smoke balls. The elongated projectiles are common, segment, shrapnel, and Palliser's shell. Of these it will only be necessary to refer to the Palliser shell and the Boxer shrapnel shell for rifled ordnance, the others presenting no novelty.

The Palliser shells, which are 7, 8, and 9 inches in diameter, are employed for the penetration of iron plates, for which purpose they have answered better than any other projectiles. As a material for firing against thick iron armour, cast iron is useless, breaking up without producing injury; wrought iron is too soft, a great proportion of the work on impact being expended in flattening out the shot; steel answers well, but is enormously expensive. The essential feature of the Palliser projectiles is that, being made of carefully selected brands of iron, and *chilled* in casting, they possess intense hardness, the property requisite in projectiles fired at iron plates with high velocities. Besides, however, this property, they have a pointed (ogival) head, which both theory and practice appear to prove is the most favourable form for the penetration of iron masses. An additional and most important advantage is the cheapness of the manufacture of these projectiles, their cost being about one fifth of that of similar steel projectiles.

In the Boxer shrapnel for rifled ordnance (fig. 10) the essential features of a shrapnel shell are embodied. Such a shell fired from a rifled gun having, previous to breaking up, a rotatory motion, considerable lateral spread is given to the bullets when released; and in the segment shell this is increased in consequence of the charge being in the middle of the shell. In the Boxer shrapnel the charge is placed in a chamber at the base, so that on explosion there is no tendency to increase the lateral spread of the bullets, but rather to increase their velocity and penetration. A tube leads the flash from the fuse to the bursting charge. The shell is filled with bullets of lead imbedded in resin. The spherical form and density of the bullets are better for range and penetration than the angular form and light material of the segments.

The fuses introduced since the last Exhibition are the two Boxer wood time-fuses for rifled ordnance, one for muzzle-loading and the other for breech-loading guns; the Pettman general service, and the Freeth modification of the Armstrong percussion fuse. The two first are adaptations of the ordinary Boxer wood time-fuse to projectiles for rifled ordnance. In the service breech-loading guns, there being no windage, a percussion arrangement—a hammer suspended by a wire—is necessary to fire the composition by the shock of the discharge; but in the fuse for muzzle-loading rifled guns, which have windage, a plug takes the place of the hammer—the plug being required, as an elongated shell proceeding point first, the burning of the composition of an open fuse would be affected by the pressure of the air during flight.

The Pettman general service fuse (fig. 11) has the following parts:—A, body; B, top plug; C, plain ball; D, steady plug; E, detonating ball; F, cone plug; G, lead cup; H, suspending wire. Round the top of the steady plug runs a groove filled with detonating composition, similar to that in the detonating ball.

On the discharge of the gun the suspending wire is broken and the lead cup crushed, in consequence of the inertia of cone and steady plugs and of balls, which do not instantaneously move with the fuze and lead cup; sufficient space is therefore left for the disengagement of the balls, and on impact the fuze is ignited by the concussion of the detonating ball on the inside of the body, or by the plain ball on the composition in the steady plug, which continuing to move after the sudden check to the motion of the fuse presses the plain ball between itself and the top plug.

Freeth's modified percussion fuze consists of a body and hammer of gun-metal, a boxwood pellet driven with composition, and two brass cups, one for supporting the hammer and the other for guarding the detonator. A needle projects down from the top of the body, and in the top of the pellet is the detonating composition. The supporting cup is crushed on the discharge of the gun, and the other cup on impact, when the detonating composition of the pellet strikes upon the needle.

The ingenious rocket lately proposed by Mr. Hale is exhibited. In the base are three vents, and round one side of each vent is a circular metal plate projecting about two inches from the base; when the gas issues from the vents its pressure on the plates causes the rocket to rotate, and gives its longer axis stability during flight, thus avoiding the necessity of using a stick. These rockets are very accurate in flight.

Two wrought-iron armour plates which have been penetrated are shown, as well as a number of photographs to illustrate their gradual destruction by firing. One, which is 13·5 in. thick, formed the shield of the west embrasure of a granite-faced battery at Shoeburyness. It was fired at from a distance of 200 yards with 7-in. steel shot:—

Gun.	Charge.	Weight of Shot.
7-inch ..	18 lb.	115 lb.
8 ..	22	130
9 ..	22	150
9·22 ..	30½	222
10 ..	36	285
10 ..	41½	260
9·22 ..	39½	221

The other plate, rolled by the Millwall Ironworks for H.M.S. Bellerophon, shows the effects of eighteen projectiles at a range of 200 yards, the actual penetrations being produced by 7 in. shot of 115 lb. of steel or chilled iron (Palliser's), fired with charges of about 22 lb. weight.

Sections made of wood and iron, and representing the following targets, are exhibited:—Hercules, Bellerophon, Minotaur, Lord Warden, and Warrior.

PRIVATE BRITISH EXHIBITION.

In an annex adjacent to the one containing the war matériel shown by the British War Department are the munitions of private exhibitors.

Sir W. Armstrong and Co., of the Elswick Works, has sent a 9-in. gun, rifled on the Woolwich system, and constructed in a similar manner, except that it has a coiled instead of a steel tube. It is mounted for a broadside port on a wrought-iron carriage and slide, with a wooden framework in front to represent the section of an iron-clad frigate, and provided with an arrangement for loading the gun. A shot-bearer is suspended to an iron bar suspended above the gun at right angles to it. This bearer can be raised from the lower deck by pulleys, and then run along the bar until opposite the muzzle; the bar pivots at one end, but can slide on a short bar at the other end; so that the shot can be brought back so as to load when the gun has recoiled.

The carriage differs in some respects from the service-carriage. The brackets are made of double plate (box girder), instead of plate and angle iron; the clamp for the elevation is inside the bracket, and the breeching is stretched along the slide, below the carriage, and cannot get entangled.

A 12-pounder shunt rifled gun is shown: it has a steel barrel, with wrought-iron coils above, and is mounted on an iron bracket-trail carriage with iron wheels. The brackets, of plate and angle iron, meet in a point, and the wheels have sixteen spokes, any one of which can be easily removed by unscrewing two nut-washers. The elevation is given by a circular rack and pinion between the brackets, worked by a wheel handle outside the right bracket, and there is a lever clamp outside the left one. The motion is much more rapid than by the ordinary elevating screw.

A number of projectiles, whole and in sections, similar to the service shot and shell, are exhibited. These consist of 9-in. *chilled* shot and shell (Palliser's), 9-in. and 12-pounder common and segment, and 600-pounder common shell.

The Whitworth Company, Manchester, exhibit four rifled guns—a 10-pounder, 32-pounder, 70-pounder, and 150-pounder, and three 2-pounder howitzers, all made of tempered steel. The 150-pounder consists of four tubes, with trunnion-rings, the outer portions being forced on by hydraulic pressure. The barrels are bored through, and closed by a plug screwed in (a double plug for the 150-pounder, and a single plug for the others), and a copper cup to prevent the escape of gas and lessen the shock on the plug.

Gun.	Calibre.	Weight. Tons.	Cwts.	Qrs.	Charge.
	Inches.				lb.
32-pounder	4·14	0	22	3	—
70-pounder	5·5	4	2	3	10*
150-pounder	7·0	7	8	0	20*

Extractors, sponges, and rammers for these guns are shown.

The 10-pounder gun weighs 7 cwt., and is a steel forging, with a trunnion-ring pressed on, and it is mounted on a wooden bracket-carriage, the brackets meeting in a point.

The 2-pounder howitzers each weigh 144 lb., and are made from solid forgings, with trunnions screwed on. One is mounted on a block trail-carriage, with an axletree-bed to take an axle for wheels or trucks, and is adapted to either mountain or boat service; another is on a boat-carriage, and the third is on a small ship-carriage, suitable for a yacht.

The rifling is the hexagonal system, with a simple six-sided projectile, without coating or studs. The form of the bore is not strictly hexagonal, and is thus described by Mr. Whitworth:—"The interior of each gun is first bored out cylindrically, and, when the rifling is completed, a small portion of the original cylindrical bore is retained along the centre of each of the sides of the hexagonal bore, and the other parts of each side recede or incline outwards towards the rounded angles, hence the diameter of the hexagonal bore is greatest at the rounded angles. This description will readily be understood by reference to the diagram (fig. 12), representing the section of the bore of a 7-in. gun."

The dimensions are correct, but the departure from the hexagon is exaggerated in the drawing, to make the form apparent. The twist of the rifling varies with the calibre of the gun, from 1 turn in 25 in. in the 2-pounder to 1 turn in 165 in. in the 9-in. gun.

The following projectiles are exhibited for the Whitworth ordnance:—

Common shell, 2, 6, 12, 32, and 70 pounders, and 7 in.
Solid shot, ditto.
Shrapnel (Boxer's).

All of which have rounded heads, and are made of cast iron.

Two 7-in. flat-headed shot, one of cast iron, to act as a pioneer (to ascertain elevation) for the other steel shot.

Case-shot, consisting of a strong iron case, and ends, not fitting

close up, but secured by three or more light pins. The interior is filled with lead, balls, and rosin; and the breaking-up depends upon three longitudinal grooves in the exterior of the case. This Whitworth case-shot was tried by the Armstrong and Whitworth committee, and pronounced to be a valuable invention.

Rifled spheres, or round projectiles with six segments taken off the outer surface to give the requisite hexagonal form, are also shown; they are slightly flattened at the top and bottom, so that when two or more are fired together they may be in contact. Three, which together are about equal in weight to the ordinary elongated shot, are intended to be fired at the same time against boats or such objects.

The Whitworth guns, being of steel, are very costly; but the projectiles can, no doubt, be cheaply and quickly made, merely requiring to be cast and then planed. Within the main building is a self-acting Whitworth machine for planing these projectiles, and it is stated "that a 150-lb. solid projectile can be cast, planed, shaped, and made ready for use by one man in twenty-eight minutes;" this cannot include cooling. The pattern and moulding box for a Whitworth elongated projectile is exhibited in the annex. There is a contrivance for giving the spiral to the interior of the mould.

Some Boxer fuzes are exhibited with the Whitworth projectiles.

It may be stated here that both the Armstrong and Whitworth 70-pounders stood in the competition trials over 3000 rounds—that is, more than three times the number assigned as the limit to the endurance of the old cast-iron smooth-bored guns. It must, however, be remembered that as the size of the gun is increased the limit of endurance is sooner reached, the difficulties to be surmounted in the manufacture of large rifled ordnance, which will be subjected to the enormous strains caused by heavy projectiles and charges being very great.

No Whitworth gun over 7-in. calibre has yet been made and tested by firing.

Major Palliser exhibits a 9-in. gun made of a coiled-iron interior with an outer jacket of iron cast over it. He has for a long time advocated the utilisation of the smooth-bored cast-iron guns for rifled ordance, by boring them up, and inserting a coiled wrought-iron barrel; and such converted guns have stood severe tests. The 9-in. gun shown has been subjected to the following proof:

	Charge.		Projectile.
20 rounds with	43 lb.	and	250 lb.
4 "	54 lb.	"	ditto.
87 "	45 lb.	"	ditto.

There are two exhibitors of projectiles having external grooves for the gas to act upon and give the shot rotation—Messrs. Cail and T. White. This method of giving rotation has not yet been tried with success, although numbers of such projectiles have been proposed and fired.

Mr. John Brown, of the Atlas Works, Sheffield, exhibits an enormous iron armour plate, 30 ft. long., 6 in. thick, and weighing 11 tons 5 cwt. Also several thick blocks and plates, steel tubes for guns, and steel projectiles, elongated and spherical.

Mr. Chalmers exhibits two models of his target, the peculiarity in the construction of which consists in the distribution of the wood and iron in the compound backing. This latter is made up of alternate horizontal layers of timber planking, 10 in. by 5 in., and iron plates 10 in. by 7-16 in., bolted together by vertical screws. Instead of putting the whole thickness of plate in front of the backing, a plate 8½ in. thick is placed in front and a second of 1½ in. behind the backing, and this inner plate is supported by a timber cushion of 3½ in. and an iron skin of ¾ in. The objects aimed at in the construction of this target are:—"To obviate the evils resulting from a simple wood backing in buckling penetration, &c., and to provide against the effects of vibration and distortion, as the fracture of plates and destruction of fastenings which must necessarily occur with rigid backings." It is intended to disperse the work of the shot over a large area. Experiment has shown that this target offers very great resistance to the penetration of projectiles—more, for instance, than the Lord Warden, a heavier target per foot.

Mr. G. Redford shows a diagram to represent the construction of a target of corrugated steel backed with wood. He claims for such armour the mechanical strength of the double arch and that the shot would not be in perfect contact on impact; the latter is stated, however, on the assumption that the shot would be flat-headed.

FRENCH GOVERNMENT.

The French Government has sent a considerable amount of artillery matériel, which is displayed in and just outside of an annex on the left of the Pont d' Jena entrance; but the guns are only of comparatively small calibre, none of their heavy breech-loading rifled guns being shown. The heaviest gun exhibited is a muzzle-loading rifled gun of cast iron, strengthened with steel hoops, mounted on a cast-iron carriage and slide, and intended for naval service. It weighs 98 cwt.; its calibre is 6·48 in.; and it fires a projectile of about 70 lb., with a charge of 8 lb. It has six grooves.

The other guns outside the annex are bronze cannon de 24, 12, and 4 (both field and mountain), rifled on the *La Hitte system*, with six grooves, and mounted on their respectives carriages; a coast battery canon de 16, on a wooden frame carriage and traversing platform; several bronze mortars—one, de ·32 (12·787 in.), on a platform waggon; another de ·27 (10·787 in.), on an iron bed; and a small ·15 mortar, on a flat wooden bed, with poles attached through rings on each side for transport; an ammunition, a forge, and a sling waggon.

One of the canon de 24 deserves notice. It has no preponderance, and is mounted on a short wrought-iron bracket-carriage, which has no elevating screw, but a clamp at each trunnion-hole, and allows of an elevation of 60 deg. being given to the gun, if necessary; the brackets are connected by a front transom, three bolts, and an iron axletree. The strengthened cast-iron gun has no preponderance, and its carriage is arranged in the same way, to allow of both horizontal and vertical fire.

The field-gun carriages have wooden block trails and iron axletrees, without wooden beds; the canon de 12 has no axletree-boxes; but the canon de 4 has one on each side. The wheels have ring tires.

Inside the annex is a canon de 12, limbered up and fully equipped with four (model) horses, provided with the light *brancis* harness, which has a breast-strap instead of a collar. This harness has been lately adopted for the French service, and is said by French artillery officers to answer well.

There are two mules equipped for mountain service, one carrying the gun, shafts, and side-arms, and the other the carriage and wheels. Also a small bronze rifled gun, on a light iron frame-carriage, two small mortars (one iron, the other bronze), and a number of rockets with flanged sticks.

Besides the above, the annexe contains a case of models of guns and carriages, and the ballistic pendulum used for musket bullets in 1847. Under the case are arranged the different service, spherical and elongated, projectiles; above are photographs of the heavy gun elevated on its carriage at 45 deg., of breaches in rivetments, &c.

The following table gives the weights, &c., of the French bronze rifled ordnance:—

Gun.	Weight of Gun.	Cal.	Charge.	Twist of Grooves.	Weight of Shell.
	Cwt.	Inches	lb.	Cals.	lb.
Canon de 24 (Siege)	39½	6	5·51	1 in 30	50
Ditto 12 (Field or position)	12	4·7	2·19	1 in 24·7	23·4
Ditto 4 (Field)	6½	3·4	1·19	1 in 26	9
Ditto 4 (Mountain) ..	2	3·4	·62	1 in 26	9

All these guns are rifled on the *système la Hitte*, with six angular grooves, the inclination of the driving side being less than that of the other side, so that, when the shell passes up the bore on coming out, the studs rise up the sides of the grooves, and the projectile is centred.

Fig. 13 represents sections of the stud and groove. By centering the projectile the wear of the bore is said to be greatly decreased.

The width of the groove is contracted, like that of the shunt gun, near the bottom of the bore. The projectiles supplied to the guns are common and shrapnel shell and case-shot; the two former are cylindro-ogival in general form, but are flattened at the top, and they have two rows of zinc studs.

The French have adopted for naval service four different natures of heavy breech-loading rifled guns, which are made of cast iron, strengthened behind the trunnions with steel rings shrunk on. The castings are made at the Imperial foundry at Ruelle, near Angoulême, but the steel rings are supplied by MM. Petin and Gaudet. The breech-loading arrangement is similar in principle to that proposed by Eastman, several of whose guns were purchased by the British Government during the Crimean War, but have never been used.

The bore is closed by a plug, with a thread on its exterior surface, fitting into a screw in the breech of the gun. The thread does not extend round the plug, but it consists of three separate equal portions, which together cover one half of the surface of the plug, the thread is removed from the three intervening spaces, and this is also the case in the breech. The plug can therefore be easily entered, its screwed portions passing up the plain surfaces in the breech; but when pressed home and turned, the threads of the plug enter those in the breech, and the plug is secured in its place. A tin cup is used to prevent the escape of gas. The chief points respecting these ordnance are given in the following table:—

Gun.	Weight.	Calibre.	Charge.		Projectile.	
			Battering.	Service.	Battering.	Service.
	Tons. cwt.	Inches.	lb.	lb.	lb.	lb.
Canon de ·27 ..	21 13	10·82	66·2	53	476	310
" ·24 ..	13 16	9·45	41·1	35·3	317	220
" ·19 ..	7 17·6	7·64	27·5	17·6	165	115
" ·16 ..	4 18·5	6·48	16·5	11·0	99	69·5

The charge is therefore rather more than ⅓th of the projectile. The canon de ·16 has three grooves; those of ·19 and ·24 have five. The twist of the grooves is increasing, from 0 to 1 turn in 30 calibres at the muzzle. These guns are mounted on wrought-iron carriages and slides, on the box-girder construction.

The compression is given on both sides by a brake of gun-metal embracing the sidepiece of the slide, the thickness of which increases from front to rear, so that the compression becomes greater as the piece recoils. The projectiles, which have studs, are common shell, and both flat-headed and pointed steel shot, the flat-headed being for close quarters.

None of these guns are, however, exhibited, although two monster breech-loading smooth-bored ordnance of similar construction, but of 42 centimetres (16½ in.) calibre, have been promised. These guns are each to weigh 39 tons, and they are intended to fire a solid spherical shot of 660 lb., with a charge of 110 lb., and a spherical shell of 462 lb. holding a bursting charge of 19·8 lb., with a charge of 72·6 lb. The endurance of the strengthened rifled ordnance, before described, is very doubtful, the results of our own experiments and the failure of the Parrott rifled-guns in America proving that little reliance can be placed on cast iron, even when strengthened, for a rifled piece. As, however, shells with studs are used, and there is therefore a certain amount of windage, the strain will probably be less than with projectiles having expanding envelopes which fill up the bore; but, on the other hand, the scoring of the bore from the rush of gas over the shot would probably be considerable.

MM. PETIN AND GAUDET.

To the right of the Pont d'Jena entrance is an annex containing the objects exhibited by MM. Petin and Gaudet, the celebrated French steel manufacturers. They consist chiefly of blocks for guns, hoops, and trunnion-rings, made of coiled soft steel; the coils are welded by hammering and flattening, and the rings are tempered and annealed. Besides 1700 French guns, MM. Petin and Gaudet have supplied foreign Powers with steel rings for*—800 guns to Italy; 500 to Spain; 120 to England; 180 to Denmark; 130 to Russia; 24 to Turkey; 40 to Norway; total, 1794.

A large steel block, bored through, turned, and provided with trunnions, is shown, but the bore is not closed; it is mounted on a service wrought-iron carriage, having a chain suspended between the brackets to support the breech, and the chain can be tightened or released by turning two handles, one outside each bracket. The weight of the block is 15·7 tons, and its calibre is 9·45 in.

There are trunnion-rings for guns of 16, 19, 24, 27, and 42 centimetres, the breech portion of a gun with trunnion-ring, and a number of rough coils. Steel projectiles spherical, cylindrical, and cylindro-ogival, of 16, 19, 20, 24, 27, 32 and 42 centimetres diameter. A steel canon de 12, weighing 11·7 cwt., mounted on a block-trail wood carriage; the bore of this gun is not closed. Also some armour-plates, with a number of indentations in them.

FRENCH MARINE DEPARTMENT.

In this building are two armour-plates, both having three flat-headed shot sticking in them; one has broken off at the base, and all have recesses for studs (the largest in front) for three grooves. Thickness of the plates, 8·6 in.; calibre of the rifled gun, 9·4 in.; weight of the cast steel cylindrical shot, 319 lb.; charge, 55 lb.; range, 21·8 yards. The gun used was probably the breech-loading rifled canon de 24. The plates are buckled and cracked behind the impacts, and some of the bolts are broken, but there is no penetration. The plates appear to consist of twelve thin strips about 5 in. deep, built up and welded together, and to have been attached by long screw-bolts to a wooden backing.

HOLLAND.

The Dutch Government exhibits the following pieces of ordnance in an annex outside the portion of the main building allotted to Holland:—

A rifled 20-pounder cast-iron gun, lined with bronze.
A rifled canon de 4 lined bronze gun.
A small rifled piece (canon de 1) for boat service.
A small bronze mortar.
All but the first have locks attached to them for firing the piece.

The object of lining the guns was to save expense by the conversion of the smooth-bored into rifled ordnance. Some difficulty was at first experienced in lining the iron guns, the bronze shrinking away from the iron in cooling. The displacement of the lining is now prevented by cutting a number of grooves in the iron bore at right angles to the axis. These grooves are filled by the melted bronze, which is also afterwards expanded in the proof.

The 20-pounder and canon de 4 have six grooves; the small boat-gun only four. The grooves of the 20-pounder and small gun are rectangular in section; those of the canon de 4 have one side curved. The projectiles, common and shrapnel shell, have zinc buttons. The 20-pounder is mounted on a bracket trail wooden travelling-carriage, and the canon de 4 on a wooden block trail-carriage. The limber of the latter has two very large boxes, each holding twenty-four rounds, and a couple of small boxes between the others for fuzes; four case shot are carried on the left axletree. The cannon de 4 is a converted smooth-bored 6-pounder, and it fires a common shell of 9 lb., and a shrapnel of 11 lb.; the gun weighs about 7 cwt. The vent of this gun is in the curved portion of the breech, and the lock is attached to the loop of the cascable; a small tube placed in the vent is fired by the hammer of the lock striking a copper cap placed over the tube. A complete set of harness is shown.

BELGIUM.

Belgium merely exhibits a cast-iron gun converted into a rifled breech-loader on the Wahrendorff system, but with lead-coated projectiles. A peculiarity in this gun is the contrivance for effectually closing the bore (fig. 14), which is the design of M. A. Frederix, at Liège. The plug is made of steel and is conical in form, and on to the cone a steel ring fits, a copper plate being attached in front; as the ring is forced back it expands, but in consequence of its elasticity regains its former position after firing. This gun is said to have been fired fifty rounds with 90 lb. shot and 13 lb. charges.

PRUSSIA.

The Prussian Government exhibit nothing, but M. Fried. Krupp, the great cast-steel manufacturer of Essen, in Prussia, has sent a fine collection of cast-steel forgings, among which are many ordnance and projectiles. The enormous scale on which M. Krupp's works are conducted will be understood when it is stated that they cover about 450 acres of ground, about one fourth of which is under cover; that the number of men employed is 8000, besides 2000 more in the coal-mines at Essen, at the blast furnaces on the Rhine, and at the iron pits on the Rhine and in Nassau; also, that during last year the produce of the works was 61,000 tons, by means of 112 smelting, reverberatory, and cementing furnaces; 195 steam-engines, from 2 to 1000 horse power; 49 steam-hammers, from 1 to 50 tons (the blocks); 110 smith's forges, 318 lathes, 111 planing machines, 61 cutting and shaping machines. The establishment has already delivered 3500 guns, valued at over £1,050,000, and it has received orders for the immediate delivery of 2200 more. Most of the guns made are rifled breech-loaders, from 4 to 300 pounders.

The ordnance which are exhibited within the main building are, with one exception, rifled breech-loaders, the chief particulars respecting which will be found annexed.

Gun.	Weight of Gun.	Calibre.	Length.	No. of Grooves.	Charge.	Projectile.			System of Breech-loading.
						Shot. Weight.	Shell. Weight filled.	Shell. Bursts.	
	Tons	In.	In.		lb.	lb.	lb.	lb.	
1000-pr.	50	14	210	40	110 to 130	1212	1080	17	Krupp's cylindro-prismatical wedge.
9-in.	12½	9	180	32	40 to 50	330	275	..	Ditto.
6-in.	4½	6	144·5	24	10 to 12	90	..	..	Krupp's single rectangular wedge.
6-pr.	lb. 948	3·8	78	18	1½	..	14·8	..	Wahrendorff.
6-pr.	do.	do.	do.	do.	do.	..	do.	..	Prussian double wedge.
4-pr.	605	3	74	21	1	..	8½	..	Krupp's semi-cylindrical wedge with Broadwell rings.

The twist given to the grooves is according to the order received.

The 1000-pounder has a forged inner tube strengthened with three layers of rings over the powder-chamber and two layers over the muzzle portion; the rings are forged from ingots without welding. The manufacture of this gun continued during night and day for sixteen months, and the cost of the piece is £15,750. The breech-loading arrangement is complicated, and some time would be necessary to go through the different operations in loading. The bore is closed by a steel plug and copper ring, which are supported by two wedges—a large one in rear and a small one working on the front of the other; the large wedge is cylindrical in form behind, so that the strain may be distributed, and not received by rectangular surfaces, which are liable to fracture at the angle. The projectile and charge are inserted at the right side, the wedges having been previously loosened by a screw on the other side, the plug removed by another screw fitted to the front of the rear wedge, and the wedges drawn out and made to rest upon a bed attached to the left side of the breech. The shot-bearer is raised by a derrick, and the projectile is forced home by a screw worked from behind the breech. When loaded, the wedges and plug are replaced, and the front wedge is worked in by a screw until it gives by pressure the requisite support to the plug.

The gun is mounted on a carriage having solid steel brackets, and weighs 15 tons. This gun has never been fired.

The 9-in. gun is forged from one ingot, except the trunnion-ring, which is a separate forging. The breech-loading arrangement is a simple cylindro or round-backed wedge, the flat front surface forming the bottom of the bore; it can be quickly moved in or out by means of one screw, and tightened in the requisite position by another screw, which moves slowly. The escape of gas is prevented by the use of a copper cup, inserted when loading. A shot-bearer is attached behind the breech, through which a wooden loading-box, with the projectile in it, is inserted, and the shot thus prevented from catching in the wedge-slot. The wedge can be easily and rapidly worked. This gun has been fired 120 rounds with 45-lb. charges, the powder used being, however, not so quick in its action as the English powder.

The 6-in. gun is forged from one ingot, and has the single rectangular wedge, of which no more will probably be made, the round-backed wedge being a stronger construction. It has been fired one hundred rounds with 12-lb. charges, but the weight of the projectile is not given.

The 6-pounders are each forged from one ingot. One has the Wahrendorff and the other the Prussian double-wedge system of breech-loading; and the former is mounted on a wrought-iron field-gun carriage of the Russian pattern, having a bracket trail, with a traversing arrangement of the brackets on the trail, and an attached iron handspike.

The 4-pounder is forged from one ingot. The one shown belongs to the Prussian Government, and is mounted upon one of the service carriages. The breech-loading arrangement, which is simpler and stronger than the double-wedge, consists of a semi-cylindrical wedge, round behind but rectangular in front, working in a slot passing through the breech. On the face of the wedge is a steel (Broadwell) ring, which, when home, fits against a similar ring in the bottom of the bore. The wedge is provided on the left side with a screw turned by a lever-handle; this screw works into a thread running across the breech over the wedge, which is brought into its required position by turning the handle. A locking-pin drops down from the top of the breech into a shallow groove in the upper surface of the wedge and keeps the latter securely in position. The general form of the wedge and rings will be understood by reference to the rough sketches in figs. 15 and 16. The carriage has a wrought-iron bracket trail, a seat on the axletree on each side of the trail, an attached iron handspike, wheels with gun-metal naves* and ring tires. This and other similar guns supplied to the Prussian Government have been tested with increasing charges up to 3½ lb. and 122 lb. shot.

M. Krupp also exhibits a small rifled muzzle-loading steel gun, for mountain service, on the French model. It weighs 215 lb., its calibre is 3·4 in., and the weight of its shell is 6½ lb.

Some hammered steel projectiles are shown, prepared for lead-coating. The lead is cast round the projectile and attached by undercut projecting rings running almost round the shot, portions of the complete rings being cut away vertically; round the outer surface of the lead-coating are a number of grooves, to allow space for the lead drawn down in passing through the bore. The projectiles are cylindro-ogival in form, and have a screw-plug at base to admit the bursting charge.

M. Berger sends three breech-loading guns—a rifled 4-pounder, with double wedge; a smooth-bored 8-pounder, with single wedge and Broadwell rings; and a smooth-bored 8-inch, with double wedge, and weighing 110 cwt. Also some steel projectiles, similar in form to those shown by Krupp.

M. Grusen, of Magdebourg, exhibits a 4-pounder cannon with Wahrendorff breech-loading arrangement; to prove the strength of the metal it was fired forty rounds after a portion of the breech had been turned off to reduce the thickness of metal. Some projectiles similar to the Prussian, both whole and fractured, and a mould for casting the lead round them, are shown.

Also, a model of a muzzle-pivoting carriage and platform for a coast battery. The principle of the carriage is similar to that proposed by Colonel Shaw, R.A., but the construction is complicated and cumbrous. The carriage has high wrought-iron brackets, having two concentric arcs cut in each, the centre of the arc being at the muzzle. The trunnions of the gun run in the rear arcs, and are moved up or down in them by slides working below them in the arcs, and attached to a frame under the gun between the brackets; the frame has slides running in the front arcs (one on each side), and a metal band in front supporting the gun at a short distance from the muzzle.

The frame is raised up or down by hydraulic pressure. Below the front of the carriage is a reservoir of water in connection with a ram, which is attached to the under part of the frame. The pressure

* "L'Artillerie Moderne," par M. Turgan, p. 34.

* The bolts pass through the bottoms of the spokes and not between them, as in the Madras pattern nave.

is given by a pump on the left bracket, in line with the breech of the gun, and connected by a pipe outside the bracket with the reservoir. An arc in rear shows the elevation. The bottom of the platform is curved, and the platform is traversed on racers by a system of cog-wheels.

GERMAN STATES.

The Saxon Company's cast-steel works at Dresden exhibit a rifled steel 4-pounder, and two breech-loading steel guns—a 4-pounder and an 8-pounder; but these present no peculiarity.

AUSTRIA.

The Austrian Government exhibit an 8-pounder on travelling-carriage complete; 4-pounder, ditto; ammunition-waggon, mountain service equipment, Hale's rockets and a rocket tube, harness complete for a battery, and projectiles for the service of rifled guns. Both guns are rifled bronze pieces, the 8-pounder having eight grooves and the 4-pounder six grooves. The form of the grooves in section is what is termed shaw-shaped (fig. 17).

The 8-pounder is mounted on a wooden carriage, having a very long bracket trail, upon which rests a box to contain ammunition, and also to serve as a seat for two men. The fore wheels are of smaller diameter than the hind wheels; no boxes are carried on the axletree, but one on the limber; the elevation is given by a handle outside the left cheek of the trail; and a pole is used for draught. The 4-pounder has also a bracket trail carriage of similar construction but lighter, and only room for one man on the trail-box. The ammunition-waggon is for the 4-pounder; it has a bracket perch, and carries two ammunition-boxes, one of immense size on the body and a smaller one on the limber.

A wheel having an iron nave with bolts passing through the bottoms of the spokes, and the machinery for making it, are shown. All the wheels have ring tires.

The rocket-tube consists of a strong iron barrel, with straight internal flanges to centre the rocket, mounted on a tripod stand with an elevating arc. The rockets are of the pattern proposed by Mr. Hale some few years ago; they have a central vent at the base for the escape of the gas which projects them, and a number of tangential holes round the head for the gas intended to give rotation.

The projectiles are common and shrapnel shell, carcase, and case shot. In the shrapnel the burster is at the base of the shell, as in Boxer's shrapnel for rifled ordnance. The general form of the shell is cylindro-conoidal, but flattened at the top. The shells are coated with tin and zinc, and have ribs of this soft metal to fit the grooves of the gun.

Two models of guns, mounted on wrought-iron carriages, for coast batteries, are exhibited. The racers are arranged for muzzle-pivoting, and, by the construction of the carriages, the muzzle would move but slightly in giving elevation.

SPAIN.

The Spanish Government show nothing but a collection of models, which are, however, well executed, and are said to represent guns and carriages, &c., actually in the Spanish service. The models consist of—

A field-gun, with carriage and four horses, each having a heavy saddle and collar.

Ditto, with carriage and six horses, having very light bricole harness.

A position or heavy field-gun, with carriage and six mules.

A siege-gun, on a travelling-carriage.

All these guns are bronze rifled pieces, having six grooves, and the carriages have wood block trails and pole draught.

A rifled bronze gun, with three grooves, on a standing carriage, with a limber running on trucks under the rear axletree and wheels on the front axle.

Three ammunition waggons, very similar in construction to those in the British service, and a forge waggon.

A wooden gun-carriage, on a traversing platform, and a platform very similar to Clerk's in construction.

A rifled bronze field-gun, with six grooves, mounted on a block-trail wrought-iron carriage with wooden wheels.

A sling-cart, sling-waggon, and devil carriage, all of iron, with iron wheels.

Two large bronze mortars, on beds having brass brackets, and a small bronze mortar on a wooden bed, with piles of shells and side-arms.

Two heavy cast-iron rifled guns, strengthened with steel over the breech, and with three grooves in the bore; and projectiles for them, having two rows of white metal studs.

A mountain-train equipment complete, consisting of nine mules, three abreast:—

First rank	.. ..	A mule carrying gun. Ditto ..... ammunition. A riding mule for officer.
Second rank	.. ..	A mule carrying gun. Ditto ..... wheels. Ditto ..... carriage.
Third rank	.. ..	Ditto ..... ammunition. Ditto ..... carriage. Ditto ..... wheels.

The guns are bronze rifled pieces, with six grooves; and the mules have pack-saddles, upon which the gun or carriage rests.

SWEDEN.

Three guns are exhibited in an annex. A large cast-iron rifled gun, strengthened by steel hoops over the breech, and a large cast-iron smooth-bored gun, both muzzle-loading, and made at Finspong in 1866. A bronze rifled field-gun, on a wooden bracket trail-carriage; the bore of the large rifled gun has three grooves, and that of the latter four grooves.

Inside the main building are a number of projectiles used in the Swedish service. Large solid shot and common shell, of cast iron and cylindro-ogival in form, with three rows of white metal studs for nine grooves. Small cylindro-ogival projectiles, having studs for three grooves; the front studs are of white metal, but the bottom row is of brass, which, not being in the same inclined line as the top row, are, probably, intended to steady the shot on the lands. An elongated shot, with two rows of wooden studs for four grooves; and a number of spherical projectiles, consisting of common and diaphragm shell, both whole and in sections.

RUSSIA.

Russia has obtained considerable numbers of guns from Krupp; but the Government has established three steel factories, two of which send gun-blocks to the Exhibition. Four such steel blocks, smooth-bored, are in the main building: their calibres are 6 in., 5½ in., 4 in., and 3½ in. respectively. An iron plate, 4½ in. thick, is also shown. It has been penetrated in four places and indented and cracked in six others, an 8-in. ball sticking in one of the indentations.

ITALY.

Two iron armour-plates, forged in the factory of Consaldo and Co., at Sampierdarena. One has a number of indentations, said to have been made at twelve metres' distance, but no other particulars are given. They appear to have been produced by 7-in. shot Some steel flat-headed shot of 6 in. or 7 in. diameter are also shown by the same company.

EGYPT.

The Viceroy of Egypt has sent a small bronze rifled gun, mounted on a block-trail wooden carriage, with shafts for single draught. It was cast at Cairo, and is intended for mountain service. It has six angular grooves,

AMERICA.

The American Government, which possesses such large numbers of ordnance, some of immense size, exhibit nothing. The only piece of ordnance in the American department is what is termed the Ferris gun, which is absurdly heavy in proportion to its calibre. It is a built-up, breech-loading rifled gun, with twenty grooves. The barrel is said to be wrought iron; over it is a layer of wrought-iron rings, and over these steel rings. The bore is closed by a screw plug, which, when withdrawn, can be turned round to the left, and a cup is used to prevent escape of gas. Two projectiles are shown, one pointed, for range, the other flat-headed, for penetration, and both have a lead ring round the shot near the base. The great advantage claimed for this gun is the amount of charge that can be usefully employed—viz., 24 oz. to 3 lb. projectile; and it is asserted that at 30 deg. of elevation the shot ranged nine miles. It is, however, obvious, that the small diameter of the projectile (1¼-in.) would account for a long range, and the immense amount of metal round such a small bore for the large charge. Three separate 1-in. plates are shown with penetrations said to have been produced by the flat-headed shot at fifty yards' range.

There is on each side of the Ferris gun one of the Gatlin batteries, which are neither pieces of ordnance nor portable arms; but as they are intended for employment as ordnance, and might in certain cases produce great execution, it is necessary to describe them. The Gatlin battery consists of a frame mounted on a gun-carriage, and supporting six steel barrels, which can be made to revolve, so as to bring each in turn opposite a chamber, by a handle at the side of a cylinder behind the chamber. In the cylinder is the mechanism for firing the cartridges, which is effected by the blow of a pin on a portion of detonating composition in the base of the cartridge; and an extractor advances as the barrels turn and withdraws the cartridge-cases. Twenty-five charges placed in a tin case drop one after another into the chamber through a gun-metal guide above. There are two sights—a hind and fore sight—so that each barrel when uppermost is laid on the object. The barrels of the larger Gatlin battery have a calibre of about an inch, and have six shallow grooves; those of the other a calibre of about half an inch, and three grooves. The larger battery throws bullets of about ½ lb., and the other bullets of 1½ oz. The object of the battery is to fire a continuous stream of bullets towards the same point, and thus to supply more effectually the place of an ordinary gun throwing grape or case shot. The smaller battery which, with its carriage complete, weighs about 6 cwt., was tried at Washington, in January, 1866, against a target three mètres square, at ranges of 100, 300, and 500 mètres, when none of the bullets missed the target. Twenty rounds were fired in eight seconds. A Gatlin battery tried at Fort Monroe against a 24-pounder howitzer, put 691 bullets into a target 48 ft. long and 6 ft. high, at a range of 150 yards, while the howitzer only put eighty-nine balls into the target in the same time, 1½ min.

The Gatlin battery is an improvement on the organ guns of the sixteenth century. The Federals, at the siege of Charleston, used a somewhat similar weapon, having twenty-five barrels, which, by means of a lever, might be diverged so as to scatter the balls according to the range, and General Gilmore reported that it was well adapted to the defence of earthworks.

INSTRUMENTS FOR DETERMINING THE VELOCITIES OF PROJECTILES.

Several of such instruments are exhibited; but the limits of this report will only allow of a mere mention of them, which, however, will be sufficient to show that a considerable advance has been made in this direction since the last Exhibition. The ballistic and gun pendulums were employed to ascertain the velocities of projectiles; but within the last few years several instruments (Vignotti's, Navez's, Benton's, &c.) have been devised for applying electricity to the determination of these velocities. Of these, the instrument generally used has been the Navez electro-ballistic apparatus, and, more recently, Colonel Leur's modification of it, consisting in the substitution of a simple mechanical arrangement in the pendulum for the conjunctor, which is not, therefore, required. One of Leur's instruments is shown in the Belgian department, and it may be here stated that the Leur's-Navez is now usually employed both in France and England for experimental purposes.

Only one velocity can, however, be taken at each round by any of the above instruments, and if the velocities at two or more points in the trajectory are required, additional instruments must be used. Now, no two instruments, even of similar construction, will probably give exactly the same results, and errors will therefore arise which, although of no great consequence in ordinary experiments, might be of importance if a number of velocities are wanted as data for the determination of the laws of the resistance of the air, or for other exact scientific questions. Two instruments of novel constructions are exhibited, both adapted to the determination of the velocities of projectiles at a number of different points in the same trajectory, and in both the results of an experiment are recorded on a revolving cylinder; but these instruments are very different in other respects.

One of these instruments, called the Schultz chronoscope, is the invention of Captain Schultz, of the French artillery, and is exhibited, carefully protected by a glass case, in the French department within the main building. The general principle of its action may be thus stated. A tuning-fork, making an ascertained number of vibrations per second, is arranged to trace on the blackened surface of a revolving cylinder a sinuous line, showing the beginning and end of each vibration. This sinuous line will be an actual scale of time. If, then, the instant the projectile reaches each of the two given points in its trajectory be marked upon the cylinder beside the scale of time, the number of vibrations between the two marks will give the time required. The principal parts of the instrument are the cylinder, vibrating fork, electric interrupter, Ruhmkorff coil, pendulum, and micrometer; and, while experimenting, the galvanic batteries and targets. A double motion of rotation and translation can be given to the cylinder; on each side of the fork are two electro-magnets, to originate, sustain, and equalise its vibrations; and the left branch of the fork carries a quill-point, which marks the trace on the cylinder; the pendulum is used to determine the number of vibrations of the fork per second; the micrometer magnifies the trace and fixes the position of the spark; and the targets are contrived so that after the rupture of one the current is transferred to the next before the projectile reaches it. This instrument* has been tried both in France and America.

The other instrument, termed Bashforth's chronograph, is the invention of the Rev. F. Bashforth, Professor of Applied Mathematics to the advanced class of Artillery officers, Woolwich. It is to be found in the British Marine department, but, as it has not been provided with a cover or protection of any kind, it is in a very unsatisfactory condition for inspection. The chronograph consists of a fly-wheel capable of revolving about a vertical axis, and carrying with it a cylinder which is covered with prepared paper for the reception of the clock and target records. Two markers, to trace the surface of the cylinder, are each capable of being lifted up from the cylinder by a lever acted upon by two electro-magnets, one pair of which is connected with a clock, and the other with the targets. Before the shot is fired the cylinder is made to revolve by setting the fly-wheel in motion, and also to descend; and the clock, by breaking the galvanic current at every swing of the pendulum, lifts the clock-marker, which otherwise describes a spiral line on the cylinder, and thus records the seconds and gives a scale of time. When a target is cut by the shot, the current through the electric magnets of the target-marker is interrupted, and the breaking of the second spiral line in the cylinder records the passage of the projectile through the targets. By a simple and ingenius contrivance the current is transferred from one target to another after each rupture. This instrument, when tried both at Woolwich and Shoeburyness, gave very regular and satisfactory results, and is simpler, and probably cheaper in construction than the Schultz chronoscope.

PORTABLE ARMS.—CLASS 37.

BY CAPTAIN V. D. MAJENDIE, R.A.

THE class of portable arms is very largely represented in this Exhibition. Out of the thirty-three countries, colonies, or states which contribute to the group (4) of "clothing and other articles worn upon the person," the following twenty-eight exhibit specimens of arms, of one sort or another, exclusive of artillery:—France, Algeria, Holland, Belgium, Prussia and the northern German States, Bavaria, Austria, Switzerland, Spain, Greece, Denmark, Sweden, Norway, Italy, the Pontifical States, Turkey, Egypt, China, Loo-Choo, Siam, Tunis, United States of America, Brazil, the American republics, Hawai, the English colonies, and Great Britain. This list is arranged in the order in which the countries would be reached by a visitor who, entering the Exhibition at Porte Rapp, and, passing into gallery 4, turned to his left, and completed the circuit of the building.

It should be noticed, however, that, although by far the most important and interesting portion of the display of portable arms is disposed in this gallery, the whole of the arms exhibited will not be found here.

There are many interesting specimens of early weapons, for example, in the inner circle, where are grouped objects illustrative of the "Histoire du Travail."

The English arms of all sorts are in two sheds in the park, on the right-hand side entering from the Pont d'Iena. The military arms manufactured in the French Government establishments of Châtellerault and St. Etienne are placed with the other stores shown by the Ministère de la Guerre in a large shed outside the building.

The non-exhibiting countries in this class are Luxembourg, Hesse, Baden, Wirtemberg, and Portugal.

The number of exhibitors in class 37 is very large, and, although all those who are named in the catalogue have not exhibited, the following list gives approximately the number of establishments which are represented:—

Country.	No. of Exhibitors according to Catalogue.	Country.	No. of Exhibitors according to Catalogue.
France	98	Brought forward	255
Algeria	11	Pontifical States ...	2
Holland	8	Turkey	102
Belgium	26	Egypt	37
Prussia	11	China	1
Bavaria	3	Loo-Choo	3
Austria	17	Siam...	1
Switzerland ...	6	Tunis	1
Spain	10	United States of America	21
Greece	2	Brazil	1
Denmark... ...	1	American Republics	2
Sweden	7	Hawaii	1
Norway	3	Great Britain and English Colonies	34
Russia	21		
Italy	31	Total	464
	255		

Among so large a number of exhibitors it is reasonable to expect to find many objects of interest. This expectation will not be disappointed. The comprehensiveness of the collection is in itself a matter of the deepest interest. We find that it includes types of almost every conceivable variety of arm, from the stone and flint arrow-heads of the remotest periods of the world's history, to the latest and most ingenious developments of breech loading firearms. There are the rude clubs and maces of aboriginal tribes for hand-to-hand warfare; and there are rifles which will shoot accurately over a range of 2000 yards. There are little toy pistols, so small that the trigger must be pulled with the finger-nail; and there are the great duck and whale guns, which almost pass beyond the limits of portable arms. There are weapons, too, of every variety of price, from the single-barrelled Liège *armes de commerce*, at 6½f., up to the almost priceless *armes de luxe*, which are a specialité of the French gun trade. There are pistols from 2½f. to 10,000f.; there are swords from 3f. to 30,000f. We find weapons of every degree of finish, and of surprising novelty of construction, such, for example, as a gun containing in the stock a small electric apparatus by which it is discharged (exhibited by M.M. Le Baron and Delmas, in the French Court); while, on the other hand, weapons of the rudest and most obsolete make are fully represented.

It would be possible, no doubt, and perhaps interesting, to trace in this Exhibition each gradation and development of the kindred arts of war and the chase, as illustrated by the various specimens of sporting and warlike appliances of different periods and countries. To do this exhaustively would involve labour of no common order, and would be to some extent foreign to the object with which this report is compiled. But without attempting to go so far as this, and without losing sight of the object of the report, it may give a certain connection to the subject, and lead visitors to regard the different typical specimens with more interest and attention than they might otherwise care to bestow upon them, if I mark the salient features in the history of hand arms, and note the various epochs of progress which have furnished us with new types.

It may reasonably be assumed, of course, that man first attacked his enemy or his prey with the natural weapons with which nature had provided him; that he fought, after his animal instinct, as animals fight now. This would be the theoretical commencement of human warfare, whether against his own or the beast kind; but practically man's intelligence must early, if not immediately, have made evident to him the advantages to be derived from the employment of auxiliary means of warfare, weighting his fist with a stone, striking with a stick or club, or thrusting with a spear. Gradually these instruments came to be fashioned in the forms and of the materials which the nature of their employment or the circumstances of the country recommended; and hand arms, or side arms, as they are now generally called, thus assumed in time a definite character and a recognised importance. Their construction and use became methodised, as it were, the weapons thenceforth advancing towards perfection, or remaining sometimes in their condition of rude primitive inefficiency, according to the means of the country and the intelligence and aptitude and needs of the inhabitants. The materials employed for these weapons have been such as could be most easily procured and most readily fabricated. Thus we find in some countries that the maces, spears, clubs and javelins are made entirely of wood, and there are nations or tribes which have not yet got beyond wooden weapons to this day. Specimens of arms of this class are to be found in the Victorian, New South Wales, and Queensland collections, among the arms from the Cape of Good Hope, Hayti, and among those exhibited as being used by the Indians of North America. Other examples, doubtless, exist among the trophies of African, East and West Indian, and other aboriginal arms which are exhibited by France, Algiers, Holland, and Siam, but which it seemed unnecessary carefully to search out.

Of weapons made of other simple materials—of stone and flint—we find examples, together with bronze swords and spear heads illustrative of the drift and bronze periods, in the "Histoire du Travail." This circle is extremely interesting, but at the time we visited it, it was very far from being complete. Not only does the "Histoire du Travail" form a fitting starting-point in an examination of the different arms, but it furnishes instructive examples, as we shall presently have occasion more particularly to notice, of the great antiquity of inventions which are often presented as absolute novelties.

Passing beyond these rude hand-weapons of wood and stone and bronze, we get to iron and steel swords and spear heads and knives and daggers. And here we find ourselves on the track which leads directly down to our own age. It is impossible not to feel that the interest which has hitherto attached to this class of arms has, in a great measure, departed since the general adoption of breech-loading rifles. We would not be misunderstood as expressing an opinion that side-arms will be no longer useful; but it is impossible to shut one's eyes to the fact that each successive improvement in fire-arms has tended to reduce proportionally the military importance of the sword and lance and bayonet; and that the introduction of a system by which the rate of fire of soldiers is multiplied four or five times must prove a serious blow to the practical value of this class of weapon. The occasions must henceforth be comparatively rare in which hand-to-hand contests will be possible: rarer still in which whole regiments, whether of infantry or cavalry, can come to close quarters; and these considerations must inevitably influence, sooner or later, the destiny and importance of arms specially intended for close fighting. This opinion, indeed, finds practical expression in a bayonet exhibited among the English arms by Mr. Scott Tucker. This bayonet is scarcely half the length of the present bayonet, and Mr. Scott Tucker suggests its adoption on the distinct ground of "the chance of crossing bayonets being materially lessened by the introduction of breech loaders." He claims for it the advantages of being comparatively light, cheap, strong, handy to draw and return, less easily parried, quick for thrust and withdrawal, free from chance of locking, and out of the way when skirmishing. However opinions may differ as to the desirability of modifying the existing bayonet, this deliberate recognition of a new order of things is not without its significance.

* It is described in a work on Electro-Ballistic Machines, by Lieutenant-Colonel S. V. Benet, U.S.A.

ARTILLERY IN THE PARIS INTERNATIONAL EXHIBITION.

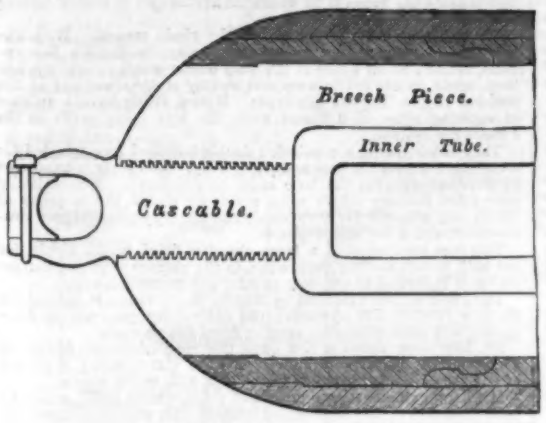


FIG. 1. SECTION OF BREECH; BRITISH GUN.

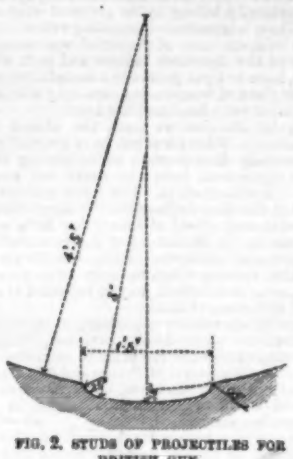


FIG. 2. STUDS OF PROJECTILES FOR BRITISH GUN.

Fig. 3.
Groove of Shunt Gun.

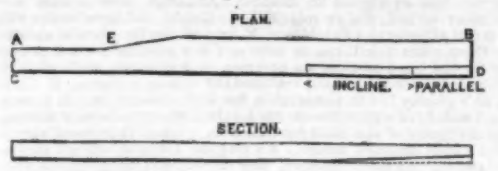
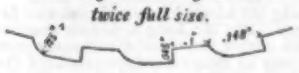


Fig. 4

Fig 5.

FIG. 6.
Section of Grooves of 12 Pr. twice full size.



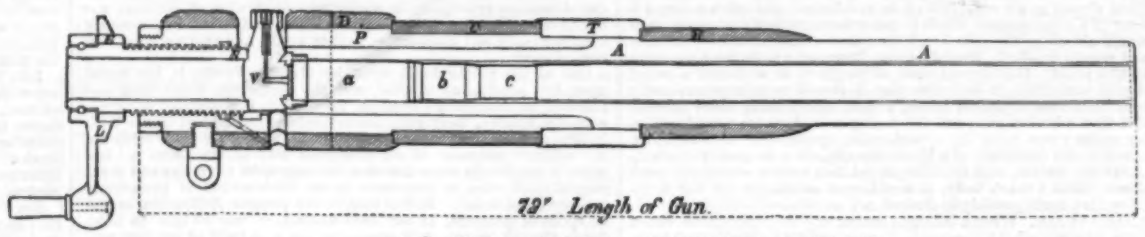
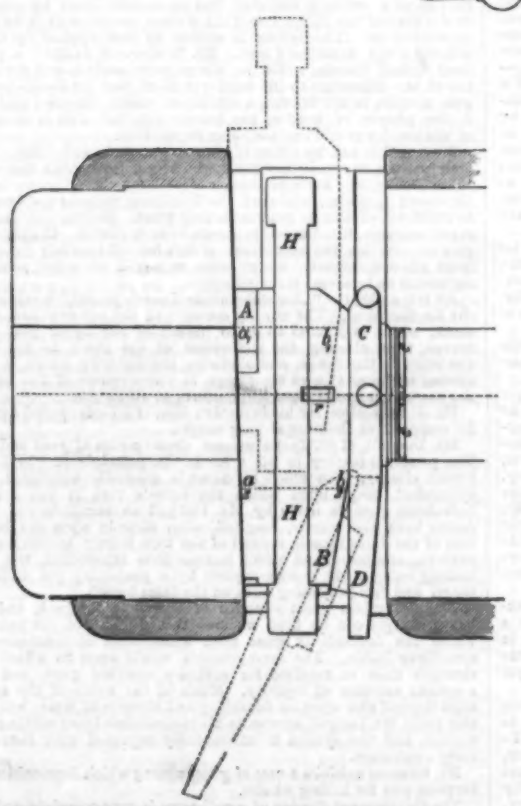


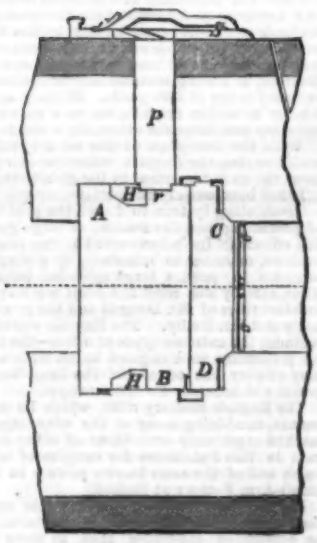
FIG. 7. SCREW BREECH-LOADING ARRANGEMENT; BRITISH GUN.

Fig 8, Plan.



WEDGE BREECH-LOADING ARRANGEMENT, BRITISH GUN.

Fig 9. Section.



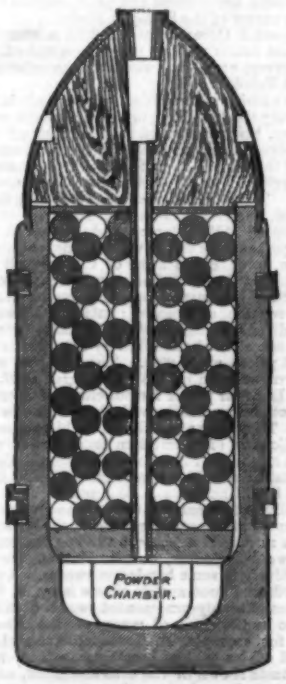


FIG. 10. SECTION OF BOXER'S SHRAPNEL FOR RIFLED ORDNANCE.

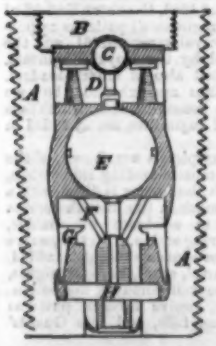


FIG. 11. SECTION OF PETTMAN'S GENERAL SERVICE FUSE.

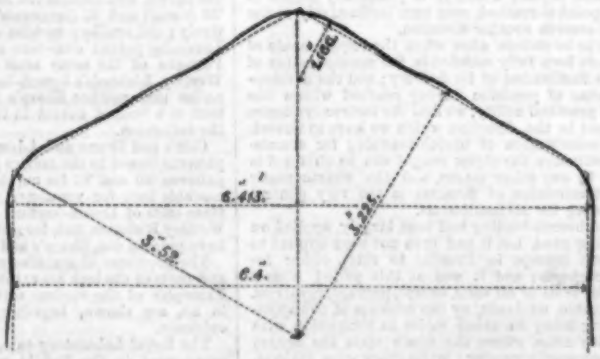


FIG. 12. SECTION OF BORE OF WHITWORTH 7-INCH GUN.

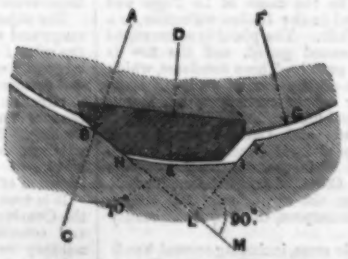


FIG. 13. SECTION OF STUD AND GROVE, FRENCH RIFLED ORDNANCE.

FIG. 14. PLUG OF BELGIAN BREECH-LOADER.

Fig 15.

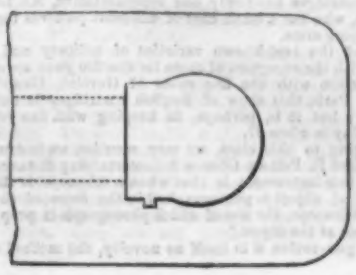
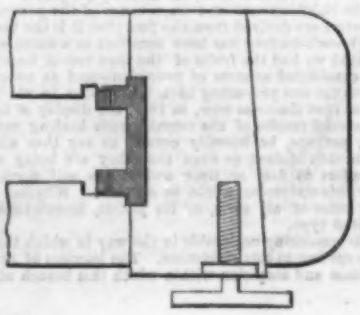


Fig 16.



KRUPP'S SEMI-CYLINDRICAL WEDGE FIELD GUNS.

FIG. 17. GROVE OF AUSTRIAN FIELD GUNS.

But apart from the question of their relative importance, the side-arms deserve to receive attention on account of having attained the highest development which they are likely to reach, as having touched in this Exhibition the maximum of excellence, whether of workmanship or richness of ornamentation, which it seems possible for them to achieve. Moreover, the exceeding variety of swords and spears and lances and hand-weapons of all sorts exhibited is very striking and might well furnish matter for a separate study.

Considered as weapons, and distinguished from mere state swords and *armes de luxe*, the exhibition of Solingen swords, though small, is probably the most valuable in the Exhibition. The very high character of the Solingen blades secured for this town, in 1855, the *grande medaille d'honneur*, and, as far as one may judge, without exhaustive experiments, the swords shown in the present Exhibition are not less worthy of distinction. Although there is only one exhibitor of Solingen swords (M Carle Reinh), Solingen blades will be found all over the Exhibition. Nearly all the Continental nations use them, mounting them, as may suit the required service or best satisfy the taste of their countrymen or customers, with plain or richly-ornamented hilts and scabbards of various patterns. M. Carle Reinh's display is not remarkable for high decoration. It is composed mainly of regulation-swords for the different armies of Europe. The cheapness of the Solingen sword is, next to their excellence, a point which deserves notice. An English infantry officer's regulation sword, with steel scabbard, may be obtained wholesale for 22*f.*; retail probably for about £1. The French Line officer's sword costs, wholesale, 24*f.*

The process by which the Solingen makers impart to their sword blades a gilding of peculiar permanence is said to be a secret.

Solingen prefers, on the whole, cast-steel to Damascene blades, although she excels in swords of both sorts. The makers are inclined to think that the introduction of the iron necessary to produce the damascened appearance is apt to soften the sword to some extent, and to interfere with the high character of the blade. On this subject, however, it is well to notice that great stress is laid by the Solingen makers on the "return" of a sword after bending. The power which a blade may have of straightening again is accepted by them almost as a crucial test of its excellence; and when a sword is bent to a point beyond which it can return perfectly straight they would almost prefer it to break than that it should exhibit softness and remain crooked. Swordmakers, however, are far from agreeing on this point. It is argued that, although it is well that a sword should straighten, it is better that it should remain permanently bent than that it should break, a bent sword being more serviceable than a broken one; and the Solingen makers are considered to lay undue stress upon the straightening qualities of the sword; as, however, the flexibility of a blade depends, after its quality, upon its transverse section, and as Solingen exhibits swords which will bend almost round a man's body, it would seem as though all the flexibility that could possibly be desired can be obtained without any admixture of iron. When a Solingen maker says he prefers if his sword be bent beyond what it is capable of standing that it should break to remaining crooked, the burden of proof rests upon others of showing what useful purpose would be served by making a blade capable of being bent further at the expense of some softness.

Some fine blades are exhibited by Svengren in the Swedish Court. They are both damascened and plain, and are of low price, although a little in excess of the Solingen blades.

The Spanish Government exhibits a complete collection of the swords and sabres used by the officers and officials in that country; also of lances, axes, &c., which are manufactured at the celebrated factory at Toledo.

The peculiarity of the Toledo sword blade is that, with the object of producing the flexibility to which Spanish makers attach so much importance, they are formed of a hearting of iron cased with steel. These blades are no longer held in the same esteem as they formerly were, and the price is double that of the cast steel blades of Solingen.

Of the private manufacturers, Jean Martin, of Madrid, shows the best case. The prices of officers' swords vary from 16 to 100 escudos (£1 13s. 6d. to £10 10s. of English money).

The case of MM. Delacour and Backes in the French armoury contains perhaps one of the most striking collection of swords in the Exhibition, and to the mass of visitors will perhaps prove even more attractive than the Solingen blades, on account of the magnificence of the ornamentation. The ornamentation may in some instances be regarded as excessive; but it is sufficiently various to meet all tastes, and the designs are often exquisitely graceful and pure. The most expensive sword exhibited by this firm is a jewelled sword for India, and priced at 30,000*f.* The cheapest sword exhibited is a dummy weapon worn by the "pompiers," at 8*f.*

Messrs. Delacour prefer for hot climates silver-plated scabbards, as they do not rust so readily with the touch of a hot hand as the steel scabbards. They show a sword with the hilt and scabbard of aluminium. This application of aluminium is exhibited rather as a curiosity than with any idea of its general adoption. The exceeding lightness of the material would be a recommendation; but its cost, and the fact that it will not take a high polish, and, finally, the extreme susceptibility of the surface to scratches, place the employment of aluminium for sword-scabbards out of the question.

There is no special novelty in the application of fish and serpent skin to sword-scabbards, but M. W. Delacour employ these skins very effectively in some handsome swords. Another case of handsome swords and conteaux de chasse is by M. Spiguel.

Examples of highly-ornamented swords of different sorts are to be found also in the cases of many of the French gunmakers: M. Thomas, for example, M. Houllier-Blanchard, Le Page, Moutier, Faure, and others exhibit specimens, which, however, beyond the degree of taste shown in the ornamentation, and the occasional fine reproduction of ancient work, possess no particular features of novelty or interest. With a view to improving the tracery of the damascene blades, some of the French makers work up steel, bismuth, nickel, and platinum. The *couteaux de chasse* in the French Court are often worthy of notice as works of art.

A noticeable novelty, which is exhibited by Lafaucheux, and of which specimens are to be found in the cases of Le Page and Chauvot, and other Liége makers, and in the Italian collection, is a sword with a revolving pistol in the hilt. The pistol is so arranged that the trigger falls within the sword guard, and the fire is delivered parallel to the blade of the sword. These revolvers, which are said to be used by the officers of the Italian army in large numbers, are invariably adapted for copper cartridges, containing their own ignition, either pin or central fire.

Several highly-ornamented Indian and Chinese swords are exhibited. For the latter is specially claimed excellence of blades. The Indian collection is well worthy of inspection, the Maharajahs of Indore, Gwalior, Jyepore, the Chief of Cherkhare, Baonee, Jhallar, Punwah, &c., being amongst the exhibitors. The Indian arms vie with, and in some instances surpass, the French in beauty and elaboration of ornament.

Algeria exhibits a trophy of portable arms, including several handsome swords and a few spears and arrows. The other French colonies on the west coast of Africa exhibit specimens of native weapons, among which is noticeable a knife for human sacrifices.

Egypt has a few Arab swords of rude workmanship.

The Turkish collection of swords, which are generally highly ornamented, is interesting, including examples of the sabres, yataghans, spears, daggers, &c., in use in different parts of the Ottoman empire. Among the sword blades are some good examples of damascene work. We may instance those exhibited by Hadji Ahmed Agha, of Constantinople.

One or two of the jewelled Tunisian swords are worthy of notice.

In the Austrian Court Würzer exhibits a few swords and *couteaux de chasse*. Beyond their cheapness, these arms possess no special interest. The cheapest sword exhibited is priced at 8½*f.*; and the regulation infantry officer's sword costs 22*f.* We had no means of determining the quality of the blades.

The Russian collection includes specimens of sword blades. The lowest price blade is 2 roubles 90 kopecks (about 11½*f.*)

The collection of trenchant arms completes the class of arms employed by man in hand-to-hand encounters.

We pass next to projectile weapons. Of these there are many varieties—viz., from the javeline, assegai, djerids, and other missile weapons intended to be thrown by hand (of which examples are to be found in the Cape Town, Natal, Australian, Victorian, Haytian, American Indian, Turkish, and East Indian collections); to the arrows intended to be projected from a blowpipe, of which poisoned specimens, with the blowpipe, are shown among the exhibits of British Guiana and Equador; arrows designed for use in long and cross bows, and exhibited in the North and South American, the Paraguayan, the Egyptian, Algerian, and various African collections. We were unable to discover in the Exhibition any specimens of a sling, which would naturally belong to the group of weapons which we are considering. These weapons are interesting rather as curiosities, or as exhibiting the backwardness of the art of war among those people, who, like some of the American Indians and most of the indigenous African tribes, have not yet generally adopted firearms. Considered as a group, this class of weapons is interesting also as furnishing the connecting link between hand and fire arms.

It is at this point also that we mark the almost total disappearance of body-armour. Where firearms have generally come in, body-armour has generally disappeared; while among those races who still depend to any extent upon the spear and sword and bow in their contests it is still retained. The finest collection of armour is that exhibited in the East Indian Court. Some examples of armour made of deer-skin and shield of rhinoceros hide, said to be bullet-proof, are shown by the Maharajah of Indore and others, in addition to fine mail suits and handsome shields. Shields are generally to be found among the nations which we have enumerated as exhibiting spears, arrows, &c., and, indeed, may be regarded as a sort of natural complement of this class of arms.

In speaking of body-armour as having generally disappeared from use in those countries where firearms are the principal weapons, we ought not to omit to notice the retention of cuirasses for our own Life Guards and for the Cuirassiers of France and Austria. These articles, so called, of defence must, however, be regarded as out of place in modern civilised warfare, and their retention in the nineteenth century is altogether anomalous.

The distance at which projectiles thrown by the hand, by the blowpipe, by the sling, or by the bow, permitted the soldier or the sportsman to engage, was exceedingly limited; and their accuracy, even within these ranges, was comparatively small. It was in these two directions principally in which the introduction of firearms was destined to effect important improvements. It increased enormously both the range and accuracy—in other words, the general effectiveness of arms.

One of the points dwelt upon by Captain Fowke, in his report upon the small-arms of 1855, was the perfection which they had attained as long-range arms of precision. The decided advances made by Thierry, Delvigne, Thouvenin, and Minié had borne fruit in 1855 and the few years preceding in the almost universal adoption for military purposes of the elongated rifle bullet. And we can point to no change since this time, bearing upon the range and accuracy of small arms, so important as the introduction of the conical gas-expanded bullet. In this respect the present Exhibition marks no epoch of progress, as the 1855 Exhibition may be said to have done; though, as we shall presently see, a change of another sort and of no less importance has been effected in the interval. There have also been introduced an infinite variety of small improvements, designed further to extend the range and improve the shooting—changes such as the substitution of a wood, and afterwards of a clay, plug for the Minié iron cup; a better adjustment of the relation of pitch, calibre, and windage, such as has been worked out by Mr. Whitworth; more careful workmanship, improvements in powder; more matured constructions of bullets for different calibres, in some of which the expanding agent is omitted altogether; and various smaller refinements, which, together, have combined to place in the Exhibition of 1867 arms which for long-range shooting and accuracy go far beyond all the conceptions of 1855. We may instance as salient examples of this class Mr. Whitworth's celebrated match rifles (of which one or two specimens are shown), which for accuracy have never been surpassed; and the rifle exhibited by Mr. Metford, as having won the the rifle-matches in 1865-6 at the extraordinary range of 2000 yards. Military and sporting rifles generally, foreign as well as English, are now required to possess a degree of accuracy and range far above the average requirements of 1855.

With the exception of the military rifles exhibited by Belgium and America, the English collection of *rifles*, though small, is perhaps the most important in the Exhibition.

It has been one of the special tendencies of the English volunteer prize-shooting system to foster the production of long-range arms of precision; and the amount of large-game shooting among English officers in India has served at the same time to correct this disposition, or rather to balance it, by giving us rifles of great power, intended to project large spherical balls with a low trajectory. Thus, side by side with the arms we have mentioned, we find the lockfast rifles of Mr. Dougall and the powerful sporting rifles of Mr. Lang and Mr. Reilly. The English collection of guns in this way includes the extreme types of rifles—the long-range small-bore rifle for projecting an elongated bullet with a *precision de luxe*, if we may employ the term, and the large-bore sporting rifle, of great power and accuracy for short ranges.

The English military rifles, which lie midway between these extremes, combining many of the advantages of both, also exhibit a marked superiority over those of other countries, and we search in vain in this Exhibition for samples of military arms of the same finish and of the same known powers as those shown by the Royal Small-Arm Factory at Enfield.

We see, then, firearms, considered as arms of precision, attaining their highest development in England. But firearms have to be considered otherwise than as mere arms of precision. To say nothing of the large group of smooth-bore sporting guns, the finish, balance, and ease of shooting of which form important features, there is a point beyond which nothing of practical utility remains to be accomplished in the matter of range and accuracy. The line has been drawn in England considerably in advance of the standard imposed on the Continent; but wherever that line be drawn there is the point beyond which it is practically useless to travel; and when this point is reached, men turn instinctively to the improvement of small-arms in another direction.

The object naturally to be striven after when the requirements of range and accuracy have been fully satisfied is the multiplication of the rate of fire and the facilitation of its delivery; and the development of firearms as arms of precision having reached within the last decade its limit of practical utility, we find the instructive desire to effect an improvement in the direction which we have indicated, bearing fruit in the substitution of breech-loaching for muzzle-loading. By such substitution the object sought can be obtained in a larger degree than by any other means, and the characteristic feature of the present collection of firearms is the very general adoption of breech-loading for all small-arms.

It is true that in 1855 breech-loading had been largely applied on the Continent to sporting guns, but it had then not been applied to any considerable extent (except in Prussia) to rifles, either for military or sporting purposes; and it was at this period almost unknown in England for arms of all sorts, except, perhaps, revolvers.

These facts are explicable, no doubt, by the problem of the application of breech-loading being so much easier in connection with sporting guns than with rifles, where the strain upon the breech action or cartridge is necessarily greater; while there were reasons, which it would occupy too much space to detail, for hesitating about the adoption of breech-loading for military purposes.

Thus the chief interest and importance of the present exhibition of small-arms are derived from the fact that it is the first exhibition in which breech-loading has been accepted as a universal principle.

As in 1855 we had the fruits of the then recent improvements in firearms considered as arms of precision—and as accuracy at long ranges was the one prevailing idea, the groove in which men were working at that time—so now, in 1867, the display of firearms gives us the material results of the recent breech-loading movement. It may not, perhaps, be literally correct to say that all small-arms are now breech-loaders, or even that they are being converted to breech-loaders as fast as time and means will permit, but substantially this statement would be accurate. Whether for sporting guns, for rifles of all sorts, or for pistols, breech-loaders are now the accepted type.

There is something noticeable in the way in which the nations, as one, have sprung to this conclusion. The barriers of ignorance and conservatism and suspicion within which this branch of the subject has been confined have been broken down, as it seems, almost in a few months all over the world.

Almost the only important country which shows muzzle-loading arms of any sort is England—viz., the Whitworth, Metford, Reilly, and other rifles used by our volunteers for match-shooting. It is to be regretted that our finest examples of arms of precision should be in this respect so far behind the age, although match-shooting is undoubtedly the occasion on which the advantages of breech-loading are least sensible.

The English display of arms is, on the whole, meagre. With the exception of the collection of arms shown by the English Government, Messrs. Reilly's case is the only one in which an attempt has been made to exhibit in a manner worthy of the class and of the position of the English gun trade. Messrs. Reilly have a number of sporting rifles of different sorts, the best being made on the central-fire system.

They exhibit, also, a needle-fire double-barrelled gun adapted for a cartridge with a tin base and paper body. The body is consumed by the discharge, the tin base must be withdrawn. Messrs. Reilly have a few military rifles; some revolving pistols, the majority of which are adapted for very small rim-fire copper cartridges; two-air-canes, and a few saloon-pistols.

This firm have adopted a brass chamber, fitted with a nipple, for use with breech-loading guns, when, in the absence of proper ammunition, it is desired to use loose powder and percussion-caps.

The pin-fire guns exhibited by Messrs. Reilly range in price from the low sum of £10 upwards; the central-fire guns are of finer quality and more expensive, ranging from £30 upwards.

Mr. Lancaster shows a few guns, the most noticeable feature of which is that in the central-fire guns the piston-spring is got rid of and the piston is hinged on to the lock with which it acts.

Mr. Lang exhibits several guns and rifles, among which are some good examples of the snap-action system. He claims as a novelty his method of extraction in central-fire guns, by which the extractor is dependent only upon a simple mechanical arrangement for its working, and is not closed, as in many guns, by pressing against the breech of the gun on the return of the barrels. Mr. Lang states that he is now getting rid of the piston spring, a point to which we attach some importance; but, as he has no guns so arranged in the Exhibition, we are unable to express any opinion as to the merits of the plan which he proposes.

Like Messrs. Reilly, Mr. Lang has adopted a movable chamber for use with guns on an emergency. But Mr. Lang makes his chamber of steel, instead of brass. He covers the chamber externally with paper, and states that in this way all escape down the outside of the chamber is effectually prevented. Mr. Lang has a fine example of a powerful breech-loading sporting rifle, designed for throwing a 1½-oz. spherical or a 2½-oz. conical ball, with a low trajectory for short ranges.

Mr. Whitworth's rifles have been already mentioned. He states that he now entirely obviates fouling in small-bore by attaching to the base of his bullet two thin copper plates with a lubricant between them. The system is similar to that applied by Colonel Boxer to the Armstrong gun. Mr. Whitworth exhibits a pair of steel double barrels, which he states were made in one piece. As one of the objections to the employment of steel for *double*-barrelled guns consists in the uncertain alteration which the steel undergoes in the process of brazing the barrels together, this manufacture of the two barrels in one has some importance.

Messrs. Colt exhibit a case of revolving pistols and rifles. These arms possess no special novelty, and, indeed, are behind the age, in so far as they are none of them adapted for cartridges containing their own ignition; while on the Continent capping revolvers are as much out of date as muzzle-loading guns. Messrs. Colt have, in some instances, fitted movable stocks to their pistols. If they would go a step further and adapt their pistols for self-igniting cartridges, these stocked revolvers might serve as useful arms for yeomanry regiments and various mounted corps.

An arm called the "Cheltenham rifle, Jones's patent," is exhibited in the English shed. The novelty consists in the construction of the stock, which is jointed so as to permit of the upper part being moved, thus altering the inclination of the stock to the barrel according to the range, and obviating the difficulty which is experienced in firing at high elevations, in consequence of the bend of the stocks remaining fixed and uniform at all ranges.

Mr. Jones claims for his invention that it affords special facilities for competitive shooting at long ranges.

Mr. Dougall, of St. James's-street, shows a case of guns and rifles. The principle feature in his arms is the principle of "lock-fast" breech closing, with which his name is generally associated. The cylindrical hinge upon which the barrels turn in the ordinary Lefaucheux guns is made by Mr. Dougall an eccentric rod which draws back the barrels, longitudinally, directly upon the beveled face of the false breech, instead of the two merely meeting as flat surfaces, and barrel and breech become thus interlocked, the interlocking being made more complete by a projecting pin under the barrel and two projecting discs on the false breech.

By this system great strength of breech is obtained, and very heavy charges can be fired without that dipping of the barrels to which the Lefaucheux guns fired under such circumstances are sometimes liable. The arrangements would seem to afford more strength than is required for ordinary sporting guns, and with a certain sacrifice of rapidity. Much of the value of the system must depend also upon its durability and absence of wear; but upon this point Mr. Dougall assures us his testimonials leave nothing to be desired, and the system is undoubtedly regarded with favour by many sportsmen.

Mr. Greener exhibits a case of guns, among which is prominent his harpoon-gun for killing whales.

The Government display of small-arms is very complete and well arranged. It was prepared at the Royal Small Arms Factory, at Enfield. The various service arms converted on the Snider system are shown, and include the long Enfield of 1853, the short Enfield of '58 (naval) and '60 (sergeants' and rifle regiments') patterns respectively; the artillery carbine of '61, the cavalry pattern '61, and the Lancaster patent oval-bore carbine used by the Royal Engineers. Patterns of the same arms are exhibited also as muzzle-loaders. Westley Richards's breech-loading carbines are exhibited, but we notice that neither Sharp's nor Terry's breech-loaders, which are both to a limited extent in the hands of regiments, are included in the collection.

Colt's and Deane and Adams's revolving-pistols are shown, of the patterns issued to the service; also two muzzle-loading rifle pistols, patterns '60 and '61 for cavalry, of which the former is fitted with a movable butt for yeomanry. We thus mark in the British service three sorts of breech-loading as actually in existence—viz., Snider, Westley Richards, and, for pistols, a revolving action. To this, as we have pointed out, Sharp's and Terry's breech-loaders might be added.

The processes of manufacture of the barrel, stock, bayonet, sights, and parts of the lock are exhibited, and are well worthy of inspection. Examples of the various service swords, twelve different patterns in all, are shown, together with lances, foils, and Life Guards' cuirasses.

The Royal Laboratory case, which stands close by, forms a fitting supplement to the Enfield case, including, as it does, specimens of the ammunitions for the different patterns of arms exhibited, together with percussion-caps, barrels for packing ammunition, and other appliances connected with small-arms.

English cartridges have only one representative, Mr. Ludlow, of Birmingham, who has a small case of different patterns for capping and non-capping arms.

Samples of the best-known varieties of military and sporting cartridges, with the exception of those for rim-fire guns, are exhibited.

In comparison with the fine cases of Gevelot, Gaupillat, and Chaudin, of Paris, this show of English cartridges is exceedingly insignificant; but it is, perhaps, in keeping with the rest of the English display in class 37.

As belonging to this class, we may mention an instrument exhibited by Lord R. Pelham Clinton for ascertaining distances. "The principle of this instrument is that when a telescope is directed to any object, that object is photographed in the focus of the object-glass of the telescope, the size of which photograph is proportionate to the distance of the object."

Although gun-cotton is in itself no novelty, the method of apply-

ing it which Messrs. Prentice, of Stowmarket, have adopted is quite new. This firm exhibit a small but exceedingly interesting case of gun-cotton for various purposes, the principal features of the display being that the whole of the cotton, whether for mining, sporting, or military purposes, is prepared on the system devised by Professor Avel. In this system the gun-cotton, which has previously been prepared on a close imitation of Von Lenk's process, is reduced to a pulp, like the pulp from which paper is made. The pulp can then be compressed into any form or density which may be desired; and by regulating the surfaces in relation to the mass, the action can be controlled with the greatest nicety. Indeed, the excessive susceptibility of the substance, rather than its want of sensibility to control, is one of the chief difficulties which those who would wish to apply it have to contend with. But where the action does not require to be brought within such nice limits—as in mining operations, for example—gun-cotton has lately furnished some remarkably satisfactory results. Its application to sporting guns is a more difficult problem; but already Messrs. Prentice have achieved considerable success in this direction, and their pulped gun-cotton cartridges are said to have given very general satisfaction last season. This success is likely to be increased by the plan lately adopted by Messrs. Prentice of inclosing each charge in a thin skin of indiarubber, quite impermeable to damp.

The application of gun-cotton to rifles is a step further, and is attended with greater difficulties. Although Messrs. Prentice exhibit some gun-cotton ammunition for the Snider and other rifles, it cannot be regarded as having any established value, and this part of the subject is as yet far from being satisfactorily worked out. But from what has been done in the lower applications of gun-cotton, and from the immense scope afforded by the pulping system in the matter of its control and arrangement, and from the care and scientific knowledge with which the subject is now being worked out in England by a special Government Committee, we have every reason to look forward hopefully to the successful and much more general introduction of gun-cotton as a substitute for powder for all arms; and it appears to us that Messrs. Prentice's contribution to the Paris Exhibition has a very high value and interest, as marking the progress which has been made in an almost new industry, and as shadowing forth the prospects or possibilities of its future.

The finest displays of small-arms in the Exhibition, and the most important, are those of France and Belgium. It is difficult to say which of these collections is the largest and most interesting.

In the French Court the display of sporting arms is larger than that in the Belgian Court, where the staple of the collection is military arms. We find, also, in the French Court greater novelties and more noticeable improvements than in the Belgian Court, resulting, doubtless, from the fact that France is mainly a producer of arms, Liége a reproducer. The French arms are generally conceived by Frenchmen; as Lefaucheux, for example, was the pioneer of the modern breech-loading system in Europe. The Belgian arms are mostly, if not entirely, Belgian reproductions of foreign systems. If we wish to observe the bent and direction which improvements in small-arms are taking—"the fashion of to-morrow," as the French would say—we should turn to the French arms; if we wish, on the other hand, to examine the principal varieties of accepted or most approved systems, the Liége collection affords an opportunity for doing so. An example of this is furnished by the relative position of central-fire guns in the two countries. In France there is a general determination towards central-fire in preference to pin fire guns for sporting guns. It is fast coming into fashion and universal use, to the supersession of pin-fire guns. But in Belgium this advance has not yet been accepted. Central-fire sporting guns are exhibited by some of the Liége makers, but in very small numbers, compared with the pin-fire or ordinary Lefaucheux guns.

There can be no doubt that pin-fire will ultimately be generally superseded by central-fire, and the next Exhibition will probably find the Liége Court filled with such arms. But the present Exhibition has occurred at that particular period of time which shows France on one side of the line and Belgium on the other; and this example serves to illustrate a characteristic difference between the French and Belgian collections.

Another noticeable point of difference between the two is in the character of the arms manufactured. The French sporting arms are distinguished by a rare ornamentation. *Armes de luxe* form, as we have before observed, a specialité of the French gun trade; while in Belgium the arms are finished with that severe plainness which is characteristic of English guns. The Belgian sporting-guns are for the most part as free from ornamentation as their military arms. In France, the value of a sporting gun is very much determined by the amount of labour lavished on the carved stock and engraved mountings and by its character as a work of art. Considered from this point of view, many of the French guns are exquisite; and the majority of the French gunmakers' cases furnish examples of these *armes de luxe* which will well repay inspection.

A further point of difference between the French and Belgian arms is the price. We do not wish to place extravagantly high-priced *armes de luxe* of France in comparison with plain Belgian arms, for such a comparison would afford no indication of the normal cost of a gun in the two countries. But taking the least ornamented of the French guns, we find the price for a double-barrelled central-fire gun, ranging generally from £28 to £32, while in Belgium the cost of such guns rarely exceeds £14.

A final distinctive feature of the Belgian display as compared with the French is the vast number of *armes de commerce*, as they are called, which find a place in the Liége collection, but which seem to be almost unknown in France. These arms are prodigies of cheapness. A single-barrelled percussion-lock gun can be purchased for 6½f.; a double-barrelled gun for 15f.; a pistol for 2½f.; a double-barrelled Lefaucheux gun can be bought for 48f.; and other arms of the same character are obtainable at correspondingly low prices. These arms are curiosities, as showing for how little a gun, not only complete in all its parts, but with a barrel which will withstand the Government proof and which in every case bears the guarantee mark, can be manufactured.

The guns are exported in large numbers to Africa, South America, Cuba, &c., and are used as articles of barter in the slave and other trades.

With this general sketch of the characteristic features of the French and Belgian collections, we may proceed to a more detailed examination of the exhibits of the two countries.

M. Houllier-Blanchard, of Paris, particularly claims for his guns excellence of workmanship, independently of high finish or ornamentation; and, as far as we were able to judge, M. Blanchard's claim is not unfounded. His guns appeared to us of fine quality, and are certainly not surpassed by any exhibited by other French makers. The price of M. Blanchard's best central-fire double guns is not high (judged by an English standard), 700f., or £28. M. Blanchard, in common with other French makers, lays great stress upon his "système de demontage," or facility for taking the gun to pieces. We are at a loss to understand why so much stress is laid upon this point by the French, and, indeed, by most of the foreign makers. In exhibiting a gun it looks pretty enough to see the barrels fall from the stock on the touch of a spring or bolt; but no special advantages, that we aware of, result from such an arrangement; and one gun is practically no better than another because it can be taken to pieces in two or three seconds less time; and yet nearly every French gunmaker has been at the pains to elaborate some ingenious contrivance specially with this view.

In addition to his sporting guns, M. Blanchard shows a very handsome pair of gold inlaid pistols, which, with the fittings of the case, in gold also, are priced at £400.

The guns of Gastinne Renette have obtained a high character in France. He exhibits both pin and central fire guns, with a preference for the latter. A novelty in M. Renette's central-fire guns consists in the method of withdrawing the piston or striker, which is done by attaching it by a simple piece of concealed mechanism to the hammer. The spiral spring is thus got rid of. M. Renette informed us that Mr. Lancaster has purchased the right to use this system in England, and that Mr. Purdey uses it. The arrangement adopted in the guns which Mr. Lancaster exhibits is, however, not the same in detail as M. Renette's, although resembling it in principle. Some military arms exhibited by M. Renette have no special value. They are not quick guns, and they require a separate motion for extracting by means of a false ramrod, which serves to push out the cartridge and acts much in the same way as the loading-rod in Colt's revolvers.

Some sporting guns which M. Renette has made for the Emperor and the Prince Imperial are worthy of notice. Although mounted in carved oxydised iron and silver, the ornamentation of these guns is not overdone, and, if one may judge from the cases of MM. Blanchard and Renette, the two first gunmakers probably in Paris, it would seem that some reaction against excessive ornamentation is setting in in France.

M. Renette has adopted Mr. Westley Richards's plan of breech-loading for sporting guns, and informed us that he had sold large numbers of guns on this system. He has also a system (snap action), which operates by a lever under the fore part of the trigger-guard.

Among other arms of different sorts, M. Renette shows some breech-loading pistols adapted for copper rim-fire cartridges.

M. Thomas has dispensed with a piston spring, but he does not, like M. Renette, attach the piston to the hammer. He incloses his piston altogether in such a way that it is not visible or assailable by damp from above, and it is left perfectly loose, to fall forward or back at will or to be pressed back by the closing of the barrels. M. Thomas shows a military breech-loader with a loose piston of this sort. He has also a sporting breech-loader on a system resembling the Snider in its main feature—viz., a block which hinges upon one side; the block, however, closes two barrels instead of one. This system, he assures us, he applied to double-barrelled guns in 1854, and that he exhibited a gun on this system in the 1862 (London) Exhibition. The inventor of this system is said to be a Lieutenant Bonin.

Some military arms of Lieutenant Bonin's are shown in another case. One, which we were informed he made in 1854, closely resembles the Snider in its main features, except that there is no "shoe," the breech-block, which is hollowed out on the under side in the centre, being attached to the barrel itself. M. Bonin exhibits also an ingenious modification of the Snider arrangement which he has recently adopted, by which the striking arrangement is all inclosed in the block; and there is a third "système Bonin" on an altogether different principle, not unlike the well-known Sharp's carbine, except that the block is opened by the action of cocking the hammer and closed by the action of lowering the hammer. How far the modifications of the Snider construction are improvements it is difficult to say in the absence of a careful trial. The Snider system is favourably regarded by the French Government, who have adopted it for their conversions. The cartridge also is the Boxer cartridge; and we were so fortunate as to have the opportunity of visiting the establishment of M. Gevalot, by whom these cartridges are being made, where we learnt that the resources of the establishment—the most considerable private cartridge factory in France—will be severely taxed to supply all the cartridges which the Government have ordered for the present year. The cartridge is said to have given great satisfaction.

M. Thomas has adopted a brass chamber and nipple for loading breech-loaders with loose powder when desired. A similar arrangement for securing this object is now very generally employed in France; and it is reasonable to suppose that, shortly, no sportsman's guncase will be deficient of a pair of false chambers.

A novelty exhibited by M. Thomas is a gun for pin or central fire cartridges, or which by means of a false chamber can be loaded with loose powder.

There are two practical objections to this ingenious arrangement, viz., that the rims of central-fire cartridges are almost invariably made larger than those of pin-fire cartridges (on account of the hold required for the extractor), and that thus a gun adapted for the one cartridge would be unsuitable for the other; secondly, that when central-fire cartridges are used, there would be no support to the cartridge opposite the pin-hole, and an inconvenient escape of gas, and possibly worse accidents, might proceed from this cause.

M. Perrin exhibits several revolving pistols adapted for central-fire cartridges, and we may take this opportunity of again noticing that on the Continent self-igniting pistol cartridges have become almost universal, and capping revolvers are fast disappearing. We have already remarked on the backwardness of Mr. Colt in this respect. In all M. Perrin's central-fire revolvers the striker forms part of the hammer.

M. Perrin claims for his sporting breech-loading guns that he uses less metal in the forepart of the stock than any other maker. The locking down of the barrels is effected by a novel and ingenious arrangement under the breech, the object of which is to increase the hold or tighten the locking in inverse proportion to the pressure of the gas.

Some of M. Perrin's *armes de luxe* are exquisitely beautiful.

M. Lefaucheux, the originator of the pin-fire system, is the only French maker who adheres entirely to this system, to the exclusion of central-fire. M. Lefaucheux has made no changes whatever in the system with which his name is now generally associated. His case, which is very large, contains guns ranging in price and quality from £12 up to £80. The revolvers exhibited by M. Lefaucheux are adapted, like his gun, exclusively for pin-fire cartridges. The principle of arranging the hammer for trigger-cocking as well as thumb-cocking has been adopted by M. Lefaucheux in common with the majority of the French makers. M. Lefaucheux shows a revolving rifle, with twenty chambers and two barrels, one above and one below the other. They correspond in position to the two circles of chambers which are disposed in the revolving breech, and for which two hammers are provided. M. Lefaucheux shows a sword-revolver such as we have noticed before, and a military pin-fire rifle of no particular interest beyond the fact of its being perhaps a solitary example of a pin-fire military arm.

A skeleton steel stock for fitting to a revolver pistol is worthy of notice.

M. Devisme has several forged steel barrels to which he drew our particular attention, but on the quality of which it is, of course, impossible for us to pronounce an opinion. He exhibits a military breech-loading rifle, adapted for metallic central-fire cartridges, but otherwise resembling the Chassepot and needle gun. It can be loaded in only two motions, and is capable, according to M. Devisme, of firing twenty shots per minute.

The arm permits of being readily disabled by removing the breech piston.

M. Devisme exhibits several explosive elongated bullets for use with smooth-bore guns, the weight being so disposed that the bullet will not turn over within ranges of 400 metres (1312 English feet.) There is, however, no novelty in this proposition. He has also an explosive harpoon bullet, for whales, the explosion of a detonating composition within the bullet causing the release of two harpoons or barbed points which project on release, like the ribs of a half-opened umbrella. Some poisoned explosive bullets for whales are also exhibited. In one of his guns M. Devisme has an arrangement by which, with pin-fire cartridges, the extractor is both on the pin and on the rim, a more just extractor being thus secured.

M. Devisme is, however, impressed with the superiority of central to pin fire, and his attention has latterly been mainly applied to the production of central-fire guns, of which he has some good examples. His guns range in price between £14 and £28.

Some revolvers, designated expressively *coups de poing*, are exhibited by M. Devisme, in which the barrel is altogether done away with, the chambers being made slightly longer than usual and sufficiently so to give all the accuracy requisite for the very short ranges at which revolvers would generally be used.

M. Jarre shows a description of repeating-pistol which is novel, although we believe Mr. Gale, of Plymouth, has applied the same principle experimentally to rifles. The arrangement consists in a flat rectangular bar containing a number of chambers, each chamber being adapted for a pin-fire metallic cartridge. The bar replaces the revolving piece of an ordinary revolver, but, instead of revolving, it travels transversely across the breech of the arm, being fed by the action of the lock. When one bar is expended it is withdrawn and either replenished or another charged bar substituted. M. Jarre states that, with five bars of ten chambers each, fifty shots can be fired in a minute; and, whether this estimate be quite correct or not, it is certain that the system permits of a very high rate of fire being attained.

M. Choisie exhibits a plan for converting muzzle-loading sporting guns, at a cost of only 15f., into breech-loaders. He cuts off the breech end of the barrels and makes it movable on a hinge. When the catch which he applies is released, a spring throws up the movable breech into which the cartridges are inserted. The same system is applicable to the conversion of military arms.

MM. Le Baron and Delmas exhibit a novelty which we have already referred to in general terms—viz., a gun which is fired by electric agency. The apparatus is contained in the stock, which is thereby weakened to a considerable extent; but this defect might no doubt be overcome by the employment of a more simple apparatus. The advantages which are claimed for the employment of electricity as the agent of ignition of small-arms are—that the cartridges contain no fulminate and are therefore less dangerous in manufacture and in transport; that, being hermetically sealed at their base, no escape of gas can take place; that the arm cannot be fired accidentally; that it requires no blow to fire it, and that it is thus less liable to movement (*deviation*) at the moment of explosion; and that the rapidity of fire is also greater.

These advantages, however, are rather imaginary than real. We do not dispute that they belong to the system; but, on the other hand, the corresponding disadvantages do not belong to an efficient system of breech-loading. Good breech-loading cartridges are not only not liable to accidental ignition, but in the event of one cartridge becoming fired the explosion is not communicated to the others. The manufacture of breech-loading cartridges is not attended with any special danger if conducted under ordinary precautions, and the fact that in the manufacture in the Royal Laboratory, Woolwich, of many millions of caps annually, only one accident (and that of a very slight character) has taken place within a period of eight or ten years, proves that practically the preparation of these articles is attended with little danger. Good breech-loading cartridges are not liable to any escape of gas; nor, as it seems to us, is the arm necessarily more liable to accidental explosion than the electric arm. The advantage of rapidity of fire can hardly be urged against a breech-loader adapted for a cartridge containing its own ignition, since the motions of loading such an arm and the electric gun would be precisely the same, if, as in many breech-loaders the arm is made self-cocking; and the objection to percussion-guns on the score of their jerking at the moment of firing has no practical value, as is proved by the extraordinary results obtained at our rifle competitions. However, the exhibition of this arm, though crude and imperfect of its sort, has a certain interest, and the idea may be found capable of more scientific and useful development.

M. Geerinck, who has obtained several medals in preceding Exhibitions, has no novelty in his case, but takes his stand solely upon the excellence of his workmanship—a point upon which it is very difficult for us to pass any opinion.

M. Leopold Bernard's gun-barrels have obtained a high reputation not only in Paris but throughout the Continent. They are all damascened barrels of steel and iron worked up together. The first process consists in twisting up together thin strips of steel and iron, and working them together under hammers. The bars thus produced are hammered out into strips, which in their turn are forged with other strips into thick bars, to be again elongated and again forged. These bars are ultimately coiled up into a barrel, planed, bored, and, if for double barrels, soldered together. Specimens of the barrels in the various processes are exhibited by M. Bernard and form an interesting display.

A central-fire gun exhibited by M. Lagrèze does not possess that novelty which the inventor claims for it. The point is considered to be the direct action of the hammer in the axis of the gun; but arrangements for securing this have been effected in many breech-loaders; and M. Lagrèze's arrangement, although presenting some novel features, does not, that we are aware, possess any special advantage. Some scissors which M. Lagrèze exhibits, and which are intended for trimming the ends of cartridge-cases, would probably be useful to sportsmen who fill their own cartridges.

MM. Le Page-Moutier et Faure have a revolver-cartridge which is novel and ingenious, but expensive in its arrangement. The object is to permit of the cartridge being easily and often re-charged. A more useful novelty in this case is a central-fire gun in which the piston is perfectly loose, and which when the gun is loaded projects, and when the gun is not loaded falls forward. By coating the upper end of the piston with copper, or so colouring it that it would attract the eye, it would always be easy to observe whether the gun is loaded or not; the position or projection of the piston forming an unfailing indication. In this way one of the objections urged by the supporters of pin-fire against central-fire may be overcome.

MM. Le Page-Moutier exhibit a muzzle-loading cap gun, on the Belgian plan of having two bullets for each barrel. To those who have not seen guns on this system this weapon—of which other examples will be found in the Belgian Court—will prove a curiosity. The gun has two barrels, but four hammers. Each barrel is loaded with two charges and two balls; the front charges are fired by the front set of hammers, when the hinder balls form at the moment of explosion the breech of the gun. It is difficult to believe that the flash can be always prevented from passing to the hinder charge in this way; but the assurances which we received on this point leave us no grounds for doubt. When the front charges have been fired, the hinder pair of hammers are brought into play to fire the hinder charges.

Whatever interest this gun may possess as a curiosity, such practical value as may have been at one time supposed to belong to it has entirely vanished with the general introduction of breech-loaders. The exact converse of this gun is to be seen in the Italian Court, where many guns are exhibited with four barrels and two hammers.

An exquisitely-finished working model of a Chassepôt rifle, one fourth the full size, is worthy of inspection as a sample of delicate workmanship. An *arme de luxe* exhibited by this firm is of fine taste and finish.

M. Portalier has an arrangement by which the lock of his guns can be readily removed for cleaning or to disable the gun, simply by turning a little catch below the trigger guard

He exhibits a breech-loader on the *système glissière*—that is to say, in which the barrels slide forward upon the forepart of the stock. This system is not novel, though M. Portalier has so arranged it as to reduce the amount of friction surfaces (the necessary existence of which forms a salient objection to the system) to a minimum.

It is not likely that guns constructed on the sliding plan will ever find much favour. They are to be found occasionally in the hands of sportsmen, and some sale has been found for them in Belgium. In England the system is less known and is little approved. Our own experience of it has been decidedly unfavourable.

M. Tronchon shows his system of conversion, not unlike the Snider, except that the breech-block opens to the left. M. Tronchon has a few military arms, and among them a magazine gun for twelve charges.

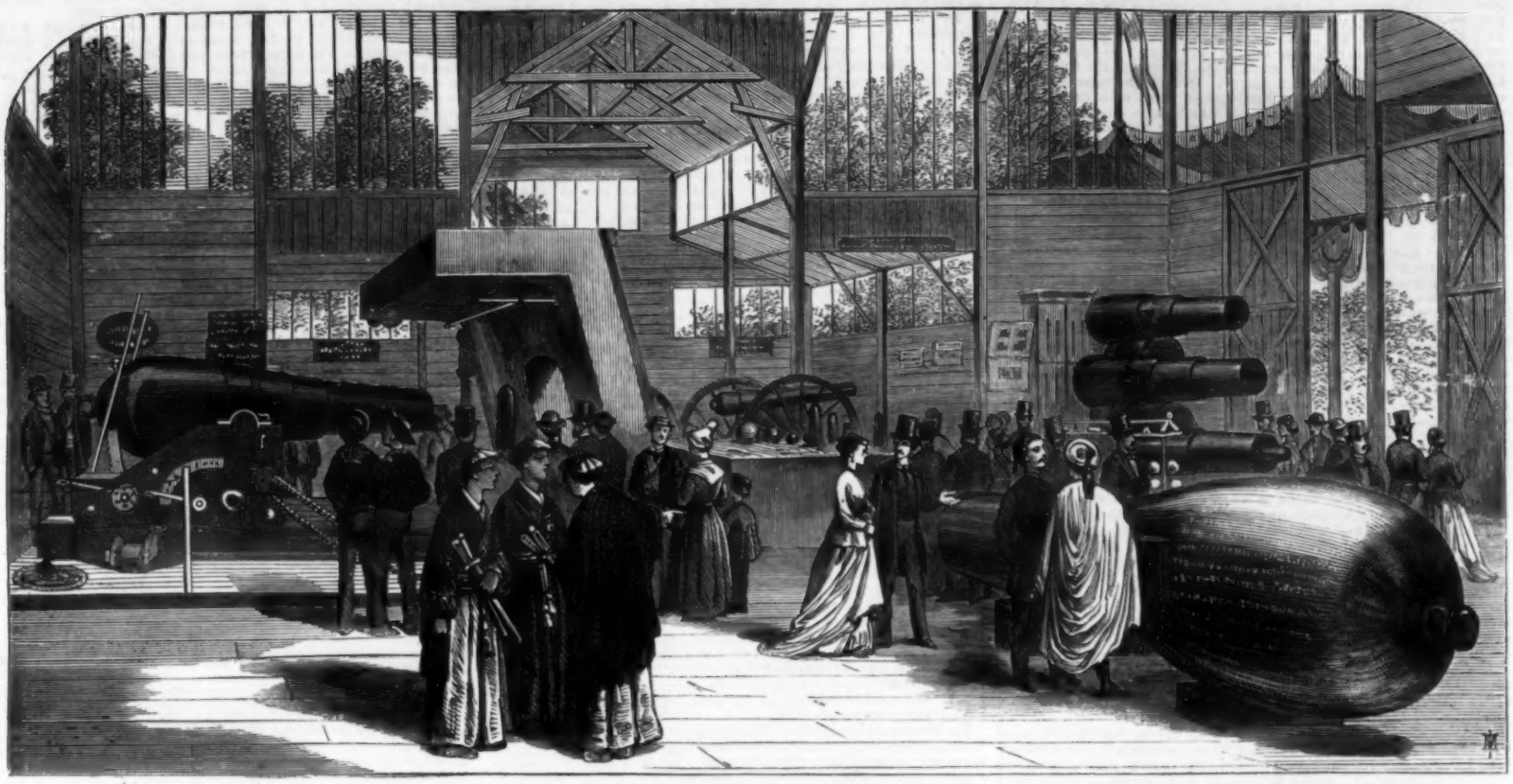
M. Leroux also exhibits a magazine gun of no special value, and for which, indeed, he claims no higher rate of fire than fifteen shots per minute, a rate which is easily surpassed by most breech-loaders of any pretensions. The system, in respect of having a magazine under the barrel, is not unlike that of the well-known Henry repeater, but it is more complicated. M. Leroux has a capping gun which is curious, but of no useful importance. The gun caps itself, twenty-five caps being arranged in a little magazine under the barrel and falling by their own weight. As each cap arrives opposite the nipple it is adjusted thereon by the mechanism which is called into play by the action of cocking.

M. Leroux has an elongated bullet for firing out of a smooth-bore gun, rotation being effected by the action of the gas upon the wings of the ball. Projectiles on this principle are no novelty, but their employment has never yet been attended with any substantial success.

M. Leroux has contrived a little "powder conductor" for depositing the powder at the bottom of the barrel of a muzzle-loading gun without any coming into contact with the sides. Such slight value as this contrivance may have possessed for match-shooting, disappears on the general introduction of breech-loaders.

MM. Cohen, Lyon, and Co. exhibit a Chassepôt rifle, the adopted arm of the French infantry, and a system of conversion designed by M. Chassepôt which has not been adopted.

THE PARIS INTERNATIONAL EXHIBITION.



MUNITIONS OF WAR EXHIBITED IN THE BRITISH SECTION OF THE PARK BY THE SECRETARY OF STATE FOR WAR (CLASS 37).—SEE PAGE 232.

The following particulars respecting the Chassepôt rifle are given by MM. Cohen and Co., and may be interesting.

	French Measurement.	English Measurement
Weight	4 Kilos, 50 Grammes	8 lb. 14 oz. 13 dr.
Calibre	11 M. Metres ...	·433 in.
Range	1000 Metres ...	1094 yds.
Weight of Cartridge	31 Grammes ...	578·4 grs.
Weight of Ball ...	24 Grammes ...	370·4 grs.
Weight of Charge ...	5½ Grammes ...	84·8 grs.
Initial Velocity ...	450 Metres ...	1476·4 ft.

Number of Grooves, four.

M. Martin shows a description of oil for preventing rust on iron or steel work, price 4f. a box. Some of the oil had been applied to some steel cannon exhibited by Petin, Gaudet, and Co., apparently with good effect.

We have noticed in general terms the character of the Belgian display of arms, and wherein it differs mainly from the French collection. The largest exhibitors are MM. Lemille, Malherbe and Co., Dresse-Ancion, Laloux and Co., Lambin, and Lepage.

M. Lemille's display of military breech-loaders is worthy of inspection. It contains samples of all the arms which this establishment has manufactured for foreign Governments and for private inventors. Among these systems are many which are quite unknown in England—mere projects of no practical value whatever; but, as displaying the activity which prevails in this department of gun making, and the infinite variety of plans which have been tried or are being tried, this collection has a high value. Among the arms are those of Laron, Gevaloé, Lemille, Benjamin, Storm, Albini and Braendlin (which system has been adopted by the Belgian Government for their military conversions), Ghasé, Dépret, Westley Richards, Remington, Bernard, Chassepôt and some others.

Malherbe and Co., one of the most important houses in Liège, exhibit, among other military breech-loaders, the Karl, said to have been adopted in Russia, Peabody, Remington, some Norwegian and Swedish chamber-loaders, Reider (a sort of modification of the Amsler-Milbank), and Hubert system. M. Hubert is the Directeur at Liège, and claims to have designed a system resembling the Peabody in its general features before Peabody's arm was brought forward.

We have already referred to a characteristic feature of the Belgian arms—viz., their exceedingly low price.

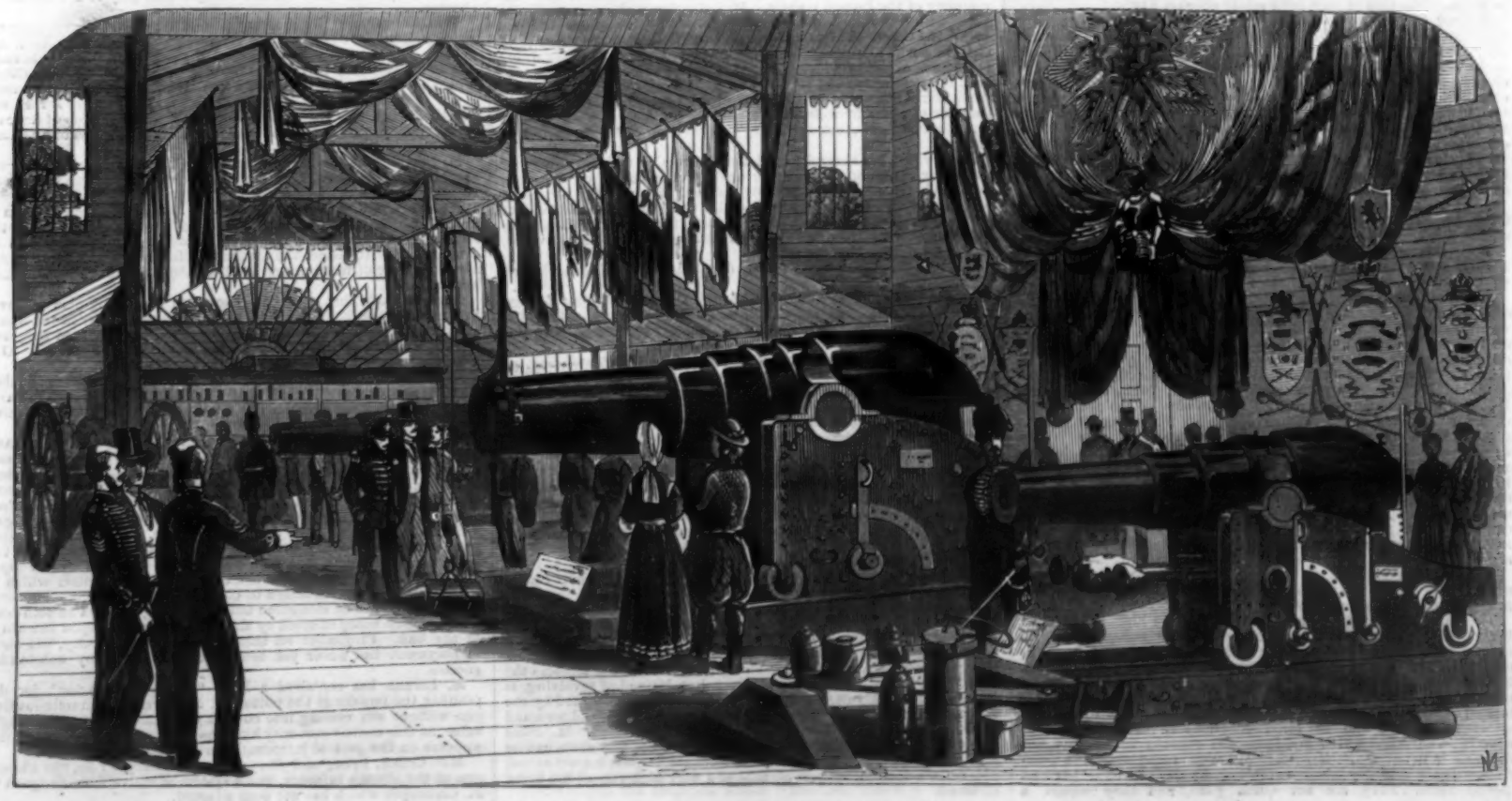
Some of the cheapest arms will be found in the collections of M. Dresse-Ancion, Laloux and Co., M. Lambin, and MM. Lepage and Chauvot. The *armes de commerce* of these makers are all of about the prices already quoted by us—viz., single-barrelled guns, from 6½f. to 7f.; double guns, 15f. to 16f.; pistols, from 2f. to 3f.; and double Lefaucheux guns, about 50f. The prices mount up gradually, according to the workmanship and character of the gun, until they attain a maximum of about 250f. to 300f. for the best breech-loading sporting gun (pin or central fire), with barrels by Leopold Bernard, of Paris.

Small breech-loading saloon rifles, on a system not unlike that adopted in the well-known Renington revolver, can be purchased in the Belgian Court for 21½f. to 26f., according to the calibre; six-shot revolving rifles for 55f.; ten-shot revolving rifles, 70f.; all adapted for pin-fire cartridges. Breech-loading saloon pistols can be purchased for 8½f.; and revolving pistols (French service pattern) for 21½f. These quotations will sufficiently indicate the extremely low price of the Belgian arms. In this court are to be seen the swords with revolvers in the hilt, of which we noticed samples in the French Court; these weapons can be purchased from the Liège makers for 50f. complete, or of a larger size for 72f. We were informed that they were much used by the Italian officers. The same principle is applied to couteaux de chasse, which are fitted with small revolvers, and cost from 45f. to 50f., according to their size. Some pistols (Sharpe's patent, 1859) are exhibited with four barrels and one hammer; the point of the hammer revolves instead of the barrels firing the charges in succession. These pistols are adapted for central-fire cartridges.

The *Société Anonyme*, of Liège, exhibit several breech-loading arms; and M. Galand has some military breech-loaders on a system of his own, which he professes to be able to supply at 27f. M. Galand has some very cheap sporting guns, breech-loaders, at 27f.

The collection of arms contributed by Prussia is small; but it seems to us important, as including a description of arm not to be found (that we could discover) in any other country. This arm, the invention of Prince Pless, is largely used in Prussia for sporting purposes. It is adapted for central-fire cartridges, but the hammer and lock of ordinary central-fire guns are done away with, and a pair of horizonal strikers, worked each by a spiral spring, are substituted. The striking arrangement is in this respect similar to that of the needle-gun, with the important difference that the striker is blunt and not sharp, and that the gun is adapted for the ordinary central-fire cartridge, instead of the consuming needle-fire cartridge.

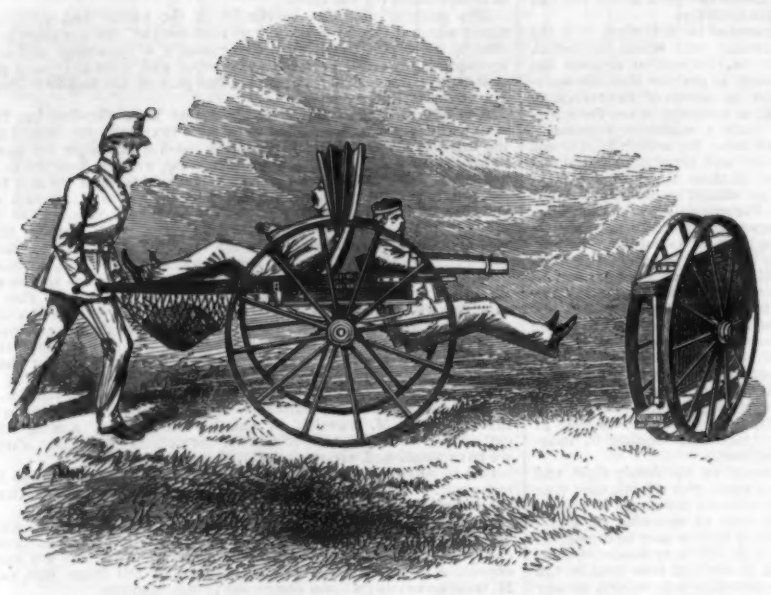
The gun "breaks down" at the breech for loading, much as an ordinary breech-loading sporting gun; but the action of opening is effected by a lever underneath the forepart of the trigger-guard, which works forward in a vertical plane; and, in opening, the gun forces back the strikers into the position of full cock. There is a simple arrangement by which the gun can be placed in a condition corresponding to that of half cock with a hammer-gun. It is unnecessary that we should attempt to describe more exactly the



MUNITIONS OF WAR EXHIBITED BY PRIVATE MANUFACTURERS (CLASS 37).—SEE PAGE 233.

THE PARIS INTERNATIONAL EXHIBITION.

FIELD HOSPITAL EQUIPMENTS (CLASS 37).



NEUDORFER'S TWO-WHEELED LITTER CONVEYING TWO WOUNDED SOLDIERS.

NEUDORFER'S LITTER FOLDED AND PACKED FOR CARRIAGE.

BRITISH MEDICINE-CART PACKED FOR SERVICE.

mechanism of the gun; but the system appears to us to possess considerable merit, and we were informed that it was severely tested by the jury of this class by actual firing and gave satisfactory results.

Some well-finished guns on this system are shown by Barella, of Berlin. Their price varies according to the amount of ornamentation; but a thoroughly good gun on this system, finished plain (in the English style), and as well made in all respects as the more expensive guns, can be purchased for £14.

We attach some importance to this system, because we believe it to be a step in advance of the hammer and lock guns. Now that central-fire is generally coming in, the retention of the hammer, which was designed for a different system of ignition, is quite unnecessary. "When it is borne in mind that this description of lock was first introduced with the old flint and steel guns, and that the copper cap was invented partly with a view to its applicability to this lock, there seems no reason for slavishly adhering to it when the other parts about the breech of a gun have been so thoroughly revolutionised."*

The abolition of locks and hammers will no doubt encounter great opposition, and chiefly on the ground that spiral springs are objectionable. We believe, however, that the objections to spiral springs rest upon no solid basis, and that mechanically they are at least as reliable as the flat spring at present employed in gun locks, and that any undue susceptibility to injury by the action of damp, or under such a condition of atmosphere as is met with at sea, may be readily neutralised by japanning or otherwise protecting the spring from these influences.

* Captain Haig, R.A., on "Military Breech-loading Rifles and their Ammunition." *Proceedings Royal Artillery Association*, vol. v., p. 248.

M. Leue and Timpe, of Berlin, also exhibit sporting guns on the *système Pless*.

In addition to the sporting guns on this system, M. Barella and MM. Leue and Timpe exhibit double-barrelled sporting needle-guns. The system of opening and cocking is the same as that in the guns which we have described; but self-consuming cartridges, instead of central-fire cartridges, are employed. This constitutes a most important difference. In the central-fire Pless guns the gas-check is furnished by the cartridge-case; in the needle-fire Pless guns this function has to be performed by the gun; and, in our opinion, such an arrangement is false in principle, although the objections to it will, doubtless, not be so obvious in smooth-bore sporting guns as in military rifles, in which the strain and local action are much more intense. In some remarks which we shall make on the subject of cartridges we shall have occasion again to refer to and more fully to explain this subject, merely indicating in this place the grounds on which we regard the needle-fire Pless gun as vastly inferior to the central-fire guns on the same system, although the difference between them may primâ facie appear but slight.

Messrs. Kœnig and Reeinart exhibit some gun-barrels, chiefly of cast steel.

M. Berger, M. Otto, and M. Schilling have nothing noticeable in their cases; indeed the whole interest of the Prussian exhibition centres in the Pless guns, exhibited by M. Barella and MM. Leue and Timpe. It should be noticed that all the German sporting guns are fitted for slings; the barrels, unless otherwise demanded, are elaborately traced by the action of acid, and the stocks are fitted with a bulge or cheek-piece on the inner side. These embellishments are, of course, dispensed with, if required.

The small-arms exhibited by Bavaria are of no special interest. Baader and Son show a lion-hunting gun, which they designate "System of Gerard and Lancaster," and a central-fire rifle gun.

Stiegele shows some highly-ornamented Lefaucheux guns.

The Austrian collection of arms is not inconsiderable, but its value is enormously diminished by the fact that the majority of the guns are sealed up in a way which renders it impossible to inspect them. No very reliable estimate of the merits of a breech-loading system can be formed, it is true, from a simple inspection of the breech action and without actual experiments; but when the breech-action is secured with wire and a lead seal, the exhibitors having left strict instructions that their representatives should not disturb the seals, the gun can hardly be said to be exhibited at all. There were several breech-loaders which we would have gladly inspected, but this restriction rendered it impossible for us to do so; for example, the Wänzle system, which the Austrians have adopted for their conversions, and which is exhibited by by Würzer, is naturally an object of interest, but an inspection of it is rendered impossible by the sealed wire over the breech.

This extraordinary practice of sealing up the guns is applied in some instances to well-known systems of breech-loading. Habermann, for example, has sealed up his specimens of the needle-gun, the Remington, Amster, Milbank, &c.

A distinctive feature of the Austrian arms is the multi-barrelled pistol, to which the name of "revolver" is incorrectly applied. These pistols have four, five, or six barrels, which do not revolve, but open, on the Lefaucheux system, or an occasional modification of that system, and are adapted for rim-fire cartridges. Some revolvers are also exhibited. In every instance the multi-barrelled and revolving pistols are adapted for cartridges containing their own ignition: the percussion-cap has completely disappeared for these arms.

FIG. 3.

FIG. 1.

FIG. 2.

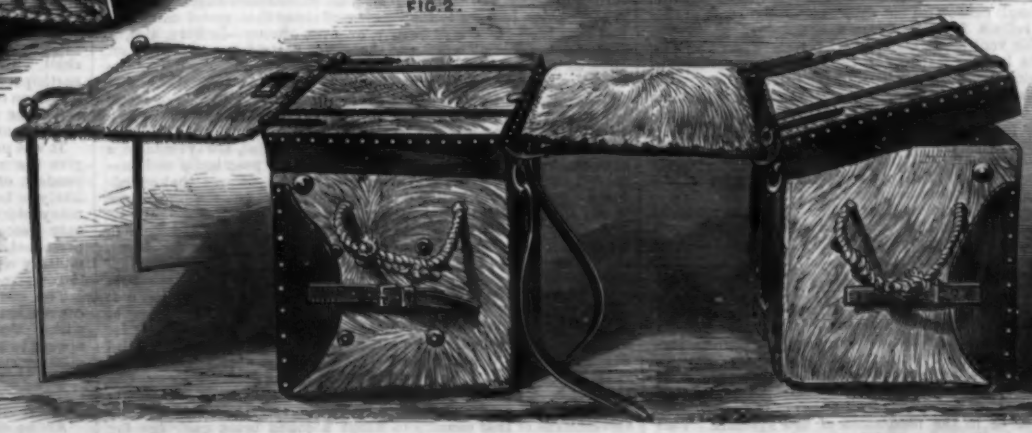


FIG. 4.

FIG 1. MEDICINE PANNIER PACKED FOR TRAVELLING. 2. TWO MEDICINE PANNIERS FORMING AN OPERATING TABLE. 3. MEDICINE PANNIER OPEN. 4. MEDICAL FIELD COMPANION.

BRITISH MEDICINE PANNIERS,—SEE PAGE 247.

Examples of these multi-barrelled pistols are exhibited by Beidermann, Grünbaum, &c. Peterlongo exhibits a case of duelling-pistols; for these the percussion-cap is retained—but whether because the demand for duelling-pistols on the new system is not large enough to create a supply, or whether because of any fancied superiority in the old system for this particular purpose, we are unable to state.

A good many rifles are exhibited by Maurer, Würzinger, Peterlongo, and Schaschl. Nearly all the Austrian rifles have a third sight situated behind the hammer, immediately in front of the eye, as in the English long-range match rifles.

Austria occupies, on the whole, a sort of middle position with regard to price, workmanship (as far as we could judge), and novelty. She is cheaper than France, and perhaps a little dearer than Belgium. The workmanship appeared to vary greatly, and the best guns are fitted with French (Leopold Bernard's) barrels. One or two of the breech-loading systems are new, but the majority are copies of foreign arms.

It is to be regretted that more has not been made of the Austrian collection, and that greater facilities are not afforded for the inspection of the arms and for obtaining information respecting them.

The American display of arms is interesting, because undoubtedly breech-loading, especially in its relation to the military service, has been more studied and has attained a higher development than in Europe. Speaking broadly, we may say that the best military breech-loaders have been obtained from America, which country is also the parent of the repeating and magazine rifles, at least in modern days, for samples of magazine rifles made in 1650 are exhibited among the Danish contributions to the "Historie du Travail."

Most of the best known American breech-loading rifles are exhibited, as the Spencer, the Remington, the Ball, the Palmer, the Peabody, and the Lanson (system of conversion).

Messrs. Smith and Wesson exhibit revolving pistols and cane rifles, adapted for pistol cartridges. They are the owners of an American patent (1855), which has seriously hampered the application of self-igniting cartridges to revolvers. By this patent Messrs. Smith and Wesson hold the right in America of boring the revolving chambers from end to end.

Although it may perhaps not be impossible to contrive a pistol adapted to self-igniting cartridges, the chambers of which are not bored from end to end, such an arrangement is necessarily a round-about way of achieving what Messrs. Smith and Wesson, by virtue of their patent, accomplish much more simply. Thus makers of revolving pistols, desirous to go with the age and to abolish caps, must either manufacture under a license from Messrs. Smith and Wesson, or must contrive some system which will render them independent of this patent, and which will yet be as cheap and efficient. To this cause we believe is to be traced the backwardness of Messrs. Colt in this matter. They are unwilling, as we understand, to purchase a license from Messrs. Smith and Wesson; and their efforts to accomplish the application of self-igniting cartridges to revolvers, without infringement of the patent referred to, have not yet met with the success which they are sanguine will ultimately crown them. In countries where Messrs. Smith and Wesson's patent does not hold the system of capping revolvers, as we have noticed, has entirely disappeared.

One feature of American rifles, as opposed to our own, is the excessive smallness of the bore and lightness of the projectile and charge. This is carried to a conspicuous extent in the Henry repeating rifle, the object being of course to admit of a larger number of charges being contained in the magazine, and thus to enable a greater number of shots to be fired without replenishing the magazine, the operation of replenishment entailing each time a distinct interval of inefficiency and forming an objection to the repeating arms.

This objection is overcome or obviated in the magazine rifles of Ball and Lamson, and in the later patterns of Spencer's rifle, by an arrangement which permits of the arm being loaded as an ordinary breech-loader, the magazine being held in reserve for a critical moment, and when exhausted, the simple breech-loading action can be fallen back upon.

This improvement is so great that it will doubtless be universally applied to repeating arms. We may mention that in America repeaters have quite superseded the revolving rifle, which was merely a cumbrous and objectionable form of repeater.

Holland shows a small and unimportant collection of firearms, sporting and military, made at Waestricht and Rotterdam.

The case of arms in the Russian Court includes military cap-guns (one a breech-loader) and some sporting guns, one of which is adapted for central-fire cartridges.

Spain exhibits a case of arms of no special interest beyond the fact that the collection includes two military breech-loaders—a Snider and a Peabody.

The Swiss arms, like those of Austria, are carefully secured by wires and seals, so as to render an inspection impossible. They are chiefly cap-guns.

Norway has had a breech-loading arm in use for military purposes since 1846. The pattern underwent slight alterations in the calibre in 1849 and 1860. This was the Hägstrom, a capping arm on a chamber-loading system. It is a type of the lowest order or group of breech-loaders. A chamber-loader of this construction is, in fact, merely a muzzle-loader cut short, or so arranged that the arm can be conveniently loaded by hand without the assistance of a ramrod. The charge is deposited in a short chamber instead of being rammed all the way down a long barrel, and the chamber is then replaced in the position for firing in the prolongation of the barrel.

Perhaps, for loading with loose powder, or wherever the cartridge is not designed to take the escape of gas, chamber-loading is the safest system of breech-loading; but it is open to several objections, among which the firing through a joint and the fact of the strain being necessarily thrown more largely and directly upon the breech action, are conspicuous. On the introduction of cartridges containing their own ignition and furnishing their own gas check, the advantages of chamber-loaders vanish, while the objections remain; and Norway is very wisely converting her chamber-loaders into breech-loaders proper, by an ingenious and inexpensive modification of the Peabody system. The conversion of these arms is said to cost only 6f. The conversion, which gives promise of being simple and successful, would have been better had central-fire been substituted for the rim-fire generally employed in the Peabody arms. These arms are well worthy of inspection.

Sweden exhibits some projects for central-fire breech-loaders, which have not yet been adopted.

That circle of the Exhibition which contains the "Histoire du Travail" is well worth visiting by anyone interested in small-arms, as many prototypes of the various perfected modern systems are to be found here. We have already mentioned the two Danish magazine arms of 1650. The same nation exhibits a revolving (flint lock) rifle of 1597; and, although cannon do not enter within the scope of this report, we cannot refrain from noticing a breech-loading cannon fitted with a movable vent-piece, clamped with a screw, on a system which embodies the leading features of the Armstrong method of breech-loading, which was made at Copenhagen in 1761.

Some of the specimens of breech-loading matchlocks of the middle of the seventeenth century are extremely interesting. Other breech-loading arms of this period are provided with a wheel flint lock.

The Russian collection, from the Palais des Armes at Moscow, contains rifled small-arms of 1626, 1668, and 1693; a six-chambered revolver of 1670, and some revolving double-barrelled guns of the seventeenth century (precise date not specified).

A curiosity in the English collection is a shield from the centre of which projects (like a gun from the turret of a modern ship-of-war), the muzzle of a breech-loading pistol. These shields formed part of the equipment of the body-guard of Henry VIII., date 1530.

We regret extremely that on the occasions of our visits this gallery was far from complete. No doubt several valuable examples will now be found in those collections which were not in a sufficiently forward condition to admit of our inspecting them.

Scattered about through the Exhibition, and in the various Government collections are a few specimens of military arms in addition to those which we have already noticed; but, for the most part, these are muzzle-loading arms, and have little interest at the present time. Every nation is now engaged either in the conversion of its existing rifles, or in the production of new systems. This activity in the introduction of breech-loaders for sporting and military purposes, and the almost universal supersession of muzzle-loaders, constitute, as we have before stated, the chief features and characteristic of this display of small-arms, as compared with similar displays in preceding Exhibitions. From this cause a greater importance attaches to cartridges than has ever belonged to them on former occasions. On this important subject we propose to make a few concluding remarks.

In a breech-loading arm but one of two methods of securing the arm against a gas escape is possible. Either the gas check is effected by the arm itself or it is effected by the cartridge.

The needle-gun is an example of an arm of the first class, so is the Chassepôt rifle, and so is the Sharp's carbine, with which the British cavalry in India are still armed. To us this system appears less sound in principle and very much less safe in practice than the opposite system of effecting the obturation by means of the cartridge. When the escape is taken by the arm, a necessity arises for a perfectly mechanically gas-tight joint. Such a condition necessarily seriously hampers the production of an arm, for such a joint is not easily combined with rapidity of action and simplicity and durability of construction. One or other of these three fundamental requirements of a good breech-loader are almost necessarily violated in the attempt to get a reliable joint. For example, in the Chassepot rifle, and in several other arms, the escape is effected by an expanding indiarubber ring, but the employment of indiarubber in any part of a military arm, and especially where it is required to fulfil an important function, is objectionable, and such a joint must be pronounced to be obviously wanting in durability. In the Sharp's carbine, where the joint is of a sufficiently durable and simple nature, it is not effective and the arm is not gas-tight. A superior way of preventing the escape is by employing a closed chamber, as in the Mont Storm and other breech-loaders of this class. But chamber-loaders are open to other grave objections; and an arrangement which entails, as all chamber-loaders, we believe, do entail, the firing through a joint (the point of junction between chamber and barrel), appears to us to be false in principle and condemnatory of a system which requires it, independently of its other possible imperfections.

However, if we assume the existence of an absolutely tight and reliable joint, the principle of throwing upon such a joint, each time the gun is fired, to the extent probably of many thousands of rounds, a severe strain, seems less sound than that of renewing the joint; for such the cartridge-case in the opposite system may be considered to be, each time of firing. Moreover, it should be remembered that, while the slightest injury to the joint in the first case renders the arm unserviceable, such injury as the cartridge may receive, or any defects in its construction, will in the second case generally be sensible only for one round; and, when that cartridge is replaced by a good one, the gun becomes again perfectly serviceable and sound.

These considerations have operated in creating a very general disposition among gunmakers and others in favour of the second system—i.e., the effecting of the gas-check by means of the cartridge. In France this feeling is very strong, and on these grounds the adoption of the Chassepôt rifle is not generally approved by the French gun trade. Some indication of the same feeling among the French officials is afforded by the fact that the system of conversion now being adopted for the French service is, as we have mentioned, substantially the Snider breech-action with the Boxer cartridge.

Another objection to effecting the obturation by means of the arm is that such an arrangement necessitates the employment of a so-called self-consuming cartridge. Such a cartridge is not only *not* self-consuming in every instance—that is to say, pieces of the paper are sometimes left behind and interfere with loading, and this constitutes a well-known and well-established defect of arms of this class; but, being necessarily thin and slight, they are less capable of resisting damp and rough usage than the stouter cartridges which require to be withdrawn after firing. The "self-consuming" cartridges have, no doubt, the advantages of cheapness; but this cheapness, being purchased at the expense, generally, of efficiency in arms and ammunition, is a false economy; and the superior rapidity of fire which they might be supposed to admit of has not as yet been established in practice.

Of cartridges of the second class—those which constitute, as it were, the breech or chamber of the gun at the moment of firing—there is a very large variety. The best-known cartridge of this class is the ordinary papier-mâche, Lefaucheux (pin fire), with brass base.

Improvements have been effected in these cartridges in the past few years by which the blowing out of the pin, and the consequent escape of gas, is obviated. This is effected by an interior lining or disc of brass, which slightly increases the price of the cartridges.

M. Gevelot sells four qualities of pin-fire sporting cartridges. The price (No. 16 gauge), empty cases, ready for filling, is—First quality, 45f. the 1000 (wholesale); second quality, 37f. ditto; third quality, 32f. ditto; fourth quality, 23f. ditto.

The difference in quality between No. 1 and No. 2 consists in the former having an internal lining of paper about the base, and in the pinhole being pierced in a way which throws up a burr and tends to prevent escape.

The third quality differs from the second in the description of paper employed, and in the strength of the base.

The fourth quality differs from the third in not having a small brass chamber to serve as a *point d'appui* for the cap, and in the general make and character of the cartridges.

In some instances a thin metallic coil, with paper inside and out rolled up with the brass, or, in other instances, with paper inside only, is substituted for papier-mâche for the case. Cartridges made either in this way or of a plain thin coil of brass soldered at the edges are manufactured by Gevelot, Chaudin, Beringer-Rochatte, and other French makers. There is a favourable disposition towards these *cartons metallique* or impermeable cartridges for sporting purposes even, and the impression that nothing but metallic cartridges are admissible for military use prevails very largely. The benefit to be derived from the employment of a metallic cartridge for sporting purposes, unless considered in connection with the number of times that the cartridge can be refilled, may not at first be apparent; but the advantages which recommend its use for military service, such as non-liability to expand or become injured by damp, greater durability, easier loading and extraction, do exist, nevertheless, in the metallic sporting cartridge, although they would not take so high a rank in the eyes of the sportsman as the soldier, because the disadvantages of papier-mâche cartridges are not so severely felt in a sporting as in a military cartridge, for which latter purpose, indeed, we hold papier-mâche to be absolutely inadmissible. The question of the employment of metallic cartridges for sporting purposes resolves itself, then, less into a question of efficiency than of price, though the former question will be present in some subordinate degree; and as regards price, looking to the number of times that metal cartridges can be refilled—fifteen or twenty, or even oftener—looking, also, to the more everlasting quality of the metal cartridge, and to the fact that, as the base and expensive parts of a cartridge, whether the cartridge be a paper or metal one, *must* be made of metal, the difference between the two consists merely in the substitution of metal for the case—a difference which, in reality, entails very much less extra expense than might at first sight be supposed; and, finally, looking to the fact that the metal, as old metal, always retains a considerable value, whereas the paper cases are practically useless—taking all these points into consideration, we believe that coiled-brass cartridges will be found, in the long run, to be actually cheaper than paper, and but little more expensive even in their first cost.

A decided preference is expressed by the French and Belgian makers for coiled brass over solid copper, or solid brass cartridges, though samples of each description are exhibited. The principal advantages claimed for coiled-brass cartridges, such as have been adopted for the service ammunition of this country, are their less cost and weight. The copper cases are nearly double the price of coiled cases in France; and in America, where the machinery for their production has been perfected, they are about one third dearer than coiled brass would be. They are necessarily heavier than coiled brass. The question of their relative efficiency has scarcely been considered abroad to the same extent as in England; but it has been so far considered in France as to have induced the Government of that country to adopt a coiled brass cartridge for their converted military arm.

On the whole, central-fire, as we have already mentioned, is preferred to either pin or rim fire.

The employment of either system is a question which affects the cartridge rather than the gun, and the advantages claimed for central-fire are—that it is more convenient than pin-fire, which necessitates the adjustment of the pin in a particular spot in the gun, and tells, therefore, to some extent, against extreme rapidity; moreover, pin-fire entails a projecting pin upon the cartridge, which is inconvenient for transport.

The principal objection to rim-fire is the undue and excessive strain which it throws upon the weakest part of the cartridge (the rim) by the explosion within it of a quantity of fulminate, and also by depriving it of the protection of a paper wad, such as is most pin and central fire cartridges preserves this part of the cartridge from the action of the powder-gas.

It is admitted that central-fire is dearer than rim-fire, but the saving of expense is considered to be more than counterbalanced by the increase in efficiency. In America rim-fire cartridges are more in favour than in France; but we learn that, even in America, it is being fast superseded by central-fire. One advantage claimed for rim-fire, in addition to its cheapness, is that if a misfire occurs at one part of the rim the cartridge may be turned round so as to present another part of the rim to the striker. The force of this plea appears to us to have been much over-estimated. In the first place, the operation of turning round the cartridge would, in most breech-loaders, involve very nearly, if not quite, as much trouble as the substitution of a fresh cartridge; and if it be argued that a cartridge will thus be saved, we would answer that the percentage of misfires in any cartridges constructed with ordinary care should deprive this plea of any practical value. In the second place, the chances of misfires with rim-fire cartridges are much greater than with central-fire cartridges, owing to the difficulty of ensuring a perfectly-continuous ring of fulminate being placed round the rim.

The finest collection of cartridges of all sorts in the Exhibition is that made by M. Gevelot, in the French Court. Among the cartridges, in addition to specimens of the various descriptions which we have mentioned, are several varieties of central-fire.

One sort has a pin in the centre, a central-pin-fire cartridge, so to express it. These cartridges cost about 10f. a thousand dearer than the ordinary pin-fire.

Another description has no pin nor cap, or anvil, the fulminate being inclosed between two discs of metal, the base and an inner disc, the latter being pierced with a fire-hole. This sort are very expensive, owing to the necessary thickness of the inner disc, and M. Gevelot considers them dangerous to manufacture.

In a third sort (equally costly) the inner disc is indented, and forms at once an anvil and a chamber. This is all inclosed by the base disc.

In a fourth sort, the cap-chamber itself forms the cap, the fulminate being situated at the bottom of the chamber; the anvil is driven forward on to the fulminate, and the ordinary action of driving the cap on to the anvil is thus reversed. The base disc incloses the whole. The cap-chamber is fixed by an iron disc. These cartridges are cheaper than the ordinary central-fire, and only about 6f. dearer than pin-fire.

In another sort two caps are placed one within the other, having a highly delicate fulminate between.

There are, of course also samples of the ordinary central-fire in which an anvil is fixed at the bottom of a chamber, and a percussion-cap is placed over the anvil. These cartridges are about 10f. dearer than pin-fire. These varieties are interesting as exhibiting the attention which central-fire is now receiving in France, and the amount of ingenuity which is being lavished in perfecting and cheapening it. Nearly all the novelties in cartridges and all that is interesting will be found in M. Gevelot's case, though the cases of MM. Chaudin, Gaupillat, Beringer-Rochatte, and Tardy Frères, in the French court, all merit attention. M. Parent and M. Tronchon exhibit a few cartridges—the latter one of paper, covered with indiarubber. M. Chaudin has substituted (for cheapness and for sportsmen) a papier-mâche disc for the ordinary metal base. It is very questionable how far this construction would answer or admit of extraction (or insertion), should the cartridges become damp. M. Beringer-Rochatte has a rim-fire cartridge, with the rim not in the edge, but round the side; and this rim is struck by a pin in the gun. In Prussia, Dreyse and Collenbursch show some cartridges, chiefly copper, and some samples of caps. In Belgium, the houses of Backmann, Dits, Fusnot, and Wassiege exhibit cartridges of different sorts, including some of the "carton metalliques" noticed in the French collection.

The English display of cartridges possesses, as we have observed, but little interest; and we did not discover in any other of the collections but those named any exhibition of cartridges worthy of mention.

FIELD HOSPITAL EQUIPMENTS.—CLASS 37.

BY MAJOR A. LEAHY, R.E.

THE collection of means for the relief and medical treatment of sick and wounded soldiers, exhibited in the park, between the Porte de l'Université and the grand entrance from the Pont d'Jena, is, of the military equipments, that most likely to excite general interest. The buildings in which the collection is placed are distinguished by a flag bearing a red cross on a white ground, being the badge laid down in act 7 of the Convention of Geneva, dated Aug. 22, 1864, as the distinctive mark of the hospitals and their personnel, which are, under that treaty, recognised as neutral.

The collection has been made under the auspices of the "Société de Secours aux Blessés Militaires," an international society, formed with the object of relieving, in all possible ways, soldiers who may have been wounded in action or who may have contracted sickness during active military operations. The society originated in suggestions arising from the insufficiency of the military arrangements for the relief of soldiers wounded during the Italian campaign of 1859, and more especially at the Battle of Solferino. It is guided in its operations by the principles laid down at an international conference held at Geneva, in October, 1863, and by the regulations embodied in the Convention of 1864.

The conference of 1863 was brought about by a committee of the "Société d'Utilité Publique," of Geneva, of which M. Dunant, the author of a work entitled "Un Souvenir de Solferino," was the promoter and secretary. It contemplated the formation of national committees to minister to the necessities of wounded soldiers, and to supply and maintain in time of war volunteer attendants in aid of the military administration of armies in the field.

The Geneva convention of 1864 has facilitated the working of these committees by establishing the neutrality of field hospitals, equipments, military hospitals in actual use as such, and of the sick and wounded therein. It also provides that the hospital attendants and the personnel employed in the transport of wounded shall, while non-combatant and solely occupied in those capacities, participate in the neutrality. Private houses devoted to the accommodation of wounded are also to be respected, and inhabitants who assist the wounded are to be protected and exonerated from a share of the contributions of war which may be imposed.

It was part of the project of the originators of the movement to give the national committees a status during a campaign, independent of the military administration; but this suggestion was likely to be attended by so much inconvenience, and gave rise to so many objections, that it was not noticed in the convention, which only recognises the neutrality of *military* hospitals and their personnel, including, of course, the volunteer attendants acting under military regulations and officially recognised by the general officer in command of the army.

The whole of the great European Powers have now signed the convention; and the fact that within the last year Austria and within the last month Russia have become parties to it would appear to prove that its principles are consistent with the autocratic military system.

The medical regulations of the French army contemplate the assistance of the "Société de Secours aux Blessés Militaires," in aid of the military administration.

Acting on resolutions agreed to at the conference of 1863, national committees of the society were formed in most of the European States;

and those of Prussia, Austria, and Denmark were called upon to practically discharge their functions during the campaign of 1865.

The good results attending the operations of the Prussian committee during the campaigns of 1865 and 1866 have gained for it the special patronage of the Government, the Queen and Crown Princess taking personal interest in the subject.

The committee, besides furnishing each army corps with a proportion of volunteer nurses (more than 600 Prussian ladies acted as such), procured with funds raised by voluntary subscriptions supplies of medical comforts, dressings, &c., to the value of over two million of francs. These supplies were periodically dispatched, under the personal direction of members of the society, to the different theatres of war, and were there dispensed to wounded and sick soldiers without distinction of nation.

The formation of a corresponding committee in England has been advocated, and is much to be desired. Objections have been made to the proposal on the ground that it is the duty of the Government to provide the military hospitals with all that is necessary, and that, if private individuals were to organise themselves for the purpose and allowed to assist, the responsibility of Government would be lessened.

As the volunteer forces have been recognised and organised as auxiliary to the regular troops, so, it is conceived, might a national branch of the "Société de Secours aux Blessés Militaires" be recognised and encouraged as auxiliary to the military medical administration.

The assistance of the volunteer nurses might be very valuable in the "temporary hospitals" established during a campaign, and which occupy a position intermediate between the "field hospitals" (or "ambulances") which accompany the troops and the "general hospitals" established in buildings specially constructed or adapted for the purpose.

The want of means for promptly removing the wounded from the field of battle has added largely to the suffering and mortality resulting from recent wars; and occasions are likely to arise during a campaign on which any amount of volunteer assistance would be acceptable. The number of wounded left in the hands of the allies after the Battle of Solferino was 20,000, the total loss of the French alone having been about 1 to 11 of the soldiers engaged. At Sadowa there were more than 18,000 wounded scattered over the field of the engagement extending from Sadowa to Clum and from Nechanitz to Königsgratz.

It will readily be conceived that to attend so large a proportion of wounded would overtax any military hospital force which could be maintained as accessory to the combatant troops; and that there is no more difficult problem in army administration than to organise a hospital personnel and equipments which, while not too costly or cumbersome, will be equal to the emergencies which may arise.

It has been estimated by some that the lives of 40 per cent of those who have perished on the field of battle in recent wars—many from thirst, hunger, or cold—could have been saved, had it been possible to remove them without delay to places where their wants could have been attended to in safety. The aid of intelligent persons willing to assist, under military regulations, in the arrangements for the first dressing of wounds, and the speedy and careful removal of the wounded to the ambulances, should not, therefore, be declined.

The "exhibits" of ambulance equipments to accompany an army in the field comprise medicine-chests, medical appliances, instruments for medical officers, stretchers, litters, cacolets, ambulance conveyances, &c.; of patterns which have been used during the last European and American wars, as well as others shown by the French and English Governments, and by manufacturers and persons interested in the subject.

The several articles may be classed as follow:—

1. The appliances for dressing wounds on the field of battle, and for the removal of wounded men to the field hospitals, which are usually established immediately in rear of the armies engaged.

2. The equipment of field hospitals or "ambulances," and the conveyances, specially constructed for the removal of sick and wounded during the march of a column, or to a fixed hospital or ship.

3. The means for removing sick and wounded from temporary to general hospitals by railway and other land conveyances.

Of the equipments exhibited a large and very interesting section has been collected by Dr. J. W. Evans, an American gentleman, who has taken great interest in the subject, and who has devoted much time to the study of military medical regulations, and of their working in time of active warfare. Dr. Evans's collection consists chiefly of examples of equipment actually found to be useful during the American war.

Count F. de Breda, one of the secretaries of the "Société de Secours," having carefully studied the equipment in use in the French and other armies, has also collected, for the consideration of the international committee, a large number of objects of the patterns which appeared to him to be most worthy of consideration.

Messrs. Fischer and Co., of Heidelberg, who are largely engaged in the manufacture of hospital appointments, have exhibited a large number of litters and apparatus for the removal of wounded, and of other appliances which have been proposed or manufactured by them for the national committees which have been established in Germany and Austria.

The whole of these articles are being examined in detail by an international committee of the Société de Secours, which has been charged with the task of proposing, with a view to its adoption by the national committees, a model equipment, which shall combine the best points of the patterns exhibited and satisfy the requirements laid down by competent authorities. As this committee includes among its members military medical officers, delegated by the Governments of the principal Powers, it may be expected that military ambulance equipments will be organised on the model which may be eventually approved.

The medical appliances to be taken on to the field of battle should be selected with reference to operations which are necessarily there performed, and ought not to include the medicines, &c., required for treatment of disease, or the appliances required for the more difficult operations which are best performed in the hospitals.

There are several examples of field medicine-chests exhibited, but attention is more especially directed to the two army medicine-panniers exhibited by the British Government and to the model pannier proposed by Count Breda. The former are baskets covered with hide, and together contain a very complete assortment of medicines and of medical appliances and comforts. The contents are conveniently arranged and securely packed, but they have not been selected with special reference to the requirements of the wounded. Bottles containing poisonous drugs are constructed so as to be readily distinguished from those holding more simple preparations. The panniers will form an operating-table. Their weight is 180 lb. In connection with them is shown a "Medical Field Companion," a kind of pouch containing a small assortment of medicines and dressings. The weight of this pouch is 11½ lb., and it is intended to be carried by hospital attendants. (See the Illustrations, engraved on page 245.)

The panniers in Count Breda's collection have been arranged by Mr. Arnault. Each is complete in itself, and, besides instruments and medicines, contains dressings for 250 wounds; the linen, lint, &c., being compressed so as to occupy about half the space usually required. The cases are made of wicker-work and covered with leather. They are lighter than wooden canteens, and they afford more security to the contents. It is said that one of those exhibited has been thrown from a second-floor window without injury to the bottles therein. The weight of each pannier complete is about 90 lb.

In addition to the panniers Mr. Arnault has arranged knapsacks to contain the dressings, &c., more immediately required on the field of battle, and intended to be carried by the hospital attendants of infantry regiments. The knapsacks weigh 18 lb., and contain dressings for fifty wounded.

Count Breda also exhibited a model pack equipment for mounted hospital attendants. The saddle-bags are arranged to carry an assortment of dressings, &c., similar to that in the knapsack of the infantry attendant. The appointments can be used as draught harness, and the shabrac and saddle be applied so as to form a kind of tent. The appointments of this equipment are the invention of M. Cogent, retired Captain in the French cavalry, and some special advantages are claimed for them. The saddle is said to be strong, very light, cheap, and well adapted to cavalry service. Its framework is made of rolled iron, and so formed that it can be adjusted to any horse.

A medical pouch, intended for small detachments which are not accompanied by medical officers, is worthy of attention.

Among the instruments for which merit is claimed is a "coupe-botte," or knife for cutting off the boots of men wounded in the foot.

For the removal of wounded from the field of battle a great number of contrivances have been proposed and exhibited; but a large proportion are wanting in qualities desirable for the purpose. There is no one example which combines all the conditions necessary to produce a good litter, and which may be stated to be—

(1) Simplicity of construction, with means of taking to pieces, so as to facilitate transport and the replacing of damaged parts.

(2) Lightness, so far as is consistent with strength; capability of being carried by one man.

(3) Means of placing the appliances on wheels, with good springs or suspension, so as to travel over rough ground with easy motion, and thereby facilitate and expedite the removal of wounded.

(4) Cheapness and durability.

Of the stretchers exhibited, there are none which appear better adapted to field service than the English War Department bearer, consisting of two poles and canvas sacking. It is strong, light, and cheap. The canvas can be easily detached, cleaned, or replaced; and by a simple arrangement the stretcher can be placed on legs, so as to form a bedstead.

No litter, however, can be satisfactory which requires two men for the removal of one; and attention is now being directed to wheeled litters, by means of which the wounded may be removed, more rapidly and with less fatigue, by half the number of men required for carrying the ordinary stretchers.

In the Prussian section of the "Société de Secours" collection is shown a wheeled litter, constructed by Messrs. Neuss, of Berlin, which was used in the campaigns of 1865-6, and which is made of canvas stretched between two light wooden poles, and placed on springs affixed to an iron axle. The side poles are provided with handles at each end, so that the litter may be drawn, pushed, or lifted. It is provided with a hood to form a protection against rain, and preps are attached to the poles, by means of which it can be supported in a horizontal position when at rest. Litters of this pattern were used to transport wounded from Düppel to Flensborg (a distance of about twenty-five miles) in 1865, and it is said that a number were supplied to the French army in Mexico, and were there considered to have advantages over the mule-litters used in the French service. The litters of Messrs. Meuss are light (weight about 110 lb.), but do not admit of being packed in a small space, and are not so simple in construction as desirable.

A wheeled stretcher will be found in Count Breda's collection, but it has no springs, and admits of many improvements in detail.

Messrs. Fischer and Co. exhibit a wheeled litter which will carry two men—one lying, the other sitting. Conveyances of this kind (see Engraving, page 245) were proposed by Dr. Neudörfer, an Austrian military surgeon, and were used, it is said, with success in the Schleswig-Holstein campaign of 1865. The example shown appears to be too complicated and expensive for military purposes, and it would not be easy to place a helpless patient in it. It is more economical in labour than Neuss's litter, and if the construction could be simplified might, doubtless, be advantageously used.

It may be interesting to observe that litters of this kind were proposed for use in the Crimea, in February, 1855, by Mr. G. Evans, a surgeon in practice in London. They were examined by a board of army medical officers, but the report was unfavourable to their introduction into the military service. (See Medical Report, 1863).

Any prejudice which may have existed against wheeled litters appears to have been removed by the reports of their successful use during the campaigns of 1865-6. And it may be expected that they will supersede, to a great extent, if not entirely, the cacolets or mule litters which enter largely into the equipment recently proposed by the Committee on Army Transport. (Appendix No. III.)

The British War Department shows a jointed stretcher, with hood, which can also be used as a chair or bed. This, if placed on wheels, would be a good type of litter.

Messrs. Deane, of London Bridge, exhibit a stretcher forming also a bedstead, which deserves attention.

The stretcher-mattrass in the English ambulance waggon is one of the best of its kind; it is provided with springs and fitted with rollers to facilitate its insertion into the carriage. The springs, the material used for covering the mattrass, and other details could be improved.

The American stretchers do not differ materially from the English patterns, and can equally be improved upon.

Dr. Landa, of Milan, proposes that hospital attendants shall wear a canvas apron, which can be used for carrying wounded.

Numerous other devices for carrying wounded are exhibited; but, on practical trial, many failed to satisfy the conditions required, as to strength, &c.; and others are too costly for field service.

The class of equipment which next merits attention is that connected with the ambulances, or field hospitals.

It comprises medicine waggons or carts, ambulance waggons and mule litters. Hospital tents also form an important element in the ambulance equipment, and examples are exhibited by Dr. Evans and by the "Société de Secours" (Prussian Section).

The medicine waggons in the collection of Dr. Evans are deserving of attention; particularly that known as M. Perot's, said to have been largely used during the war in America. In this waggon the drawers and compartments are adapted to the carriage of medicines in bulk or in bottles; and, by an ingenious arrangement, the latter are secured from fracture. A spring is placed under each bottle, which secures it in the compartment allotted to it, and admits of its being readily taken out and replaced. The rear of the waggon is so constructed as to shelter the surgeon while dispensing. And a set of hand litters, and an amputating table, are carried.

Count Breda exhibits a model of a medicine cart, the peculiarity of which is, that it is constructed so that medicines and appliances shall be arranged in boxes or knapsacks (as above described), containing assortments applicable to a certain number of wounded.

The English medicine-cart, of which an example is shown, is used to carry hospital tents, bedding, cooking and other utensils for twenty patients; also boxes containing medical comforts and appliances, examples of which are exhibited.

The cart weighs 830 lb. when empty, and 2240 lb. when loaded. The English ambulance waggon weighs 1624 lb. including fittings; it will carry eight wounded, two lying and six sitting. This as well as the store cart differ in but few details from the ordinary transport waggons and carts, the wheels and framework being of a very substantial character.

The ambulance conveyance in general use in the French army is also an adaptation of the "Voiture unique" in that service; and differs, it is believed, but little from that exhibited in the British section, being if anything heavier.

This waggon, however, is not exhibited, and the French Government shows two ambulance conveyances now in use experimentally—viz., a two-wheeled cart, weighing 650 lb., intended to be drawn by one horse; and a waggon, weighing 2050 lb., to be drawn by two horses.

The use of two-wheeled carts is attended with disadvantages, which render it undesirable to adopt them in a model ambulance equipment. In the first place, the motion is most unfavourable for the transport of wounded; and, if the cart were to proceed at a pace quicker than a walk, might be intolerable. Secondly, there would be great risk of serious accidents to the wounded if the horse were to stumble or the shafts to break.

The new pattern waggon shown by the French Government is simply a bad omnibus. It will carry ten sitting, or two men sitting and two on stretchers. It does not appear to possess any of the qualities peculiar to a good ambulance conveyance, and which may be stated to be as follow:—

1. Very easy motion.

2. Convenient arrangement of beds and seats, with sufficient space and ventilation.

3. Facility for mounting and for inserting the stretchers on which badly-wounded men could be placed.

It is also very desirable that the waggons specially constructed for conveyance of sick should be light, so as not to require, under the ordinary circumstances of a campaign, more than two horses; and that they should admit of being easily turned in a small space. It is a question whether they should not be driven from a seat rather than by a postillion.

A suitable four-wheeled waggon, which could carry two, or, on an emergency, four, men lying and three sitting, or which could be arranged to carry a larger proportion of men sitting, might, it is conceived, be devised.

Of the special conveyances exhibited, none possess the conditions desirable in ambulance conveyances to a greater degree than those used in America, examples of which are shown in Dr. Evans's collection, and in the shed for exhibition of American agricultural machinery. These waggons are of the character of light four-wheeled carriers' carts, with extra springs and seats to adapt them to the particular use for which they are intended to be applied. It is said that this class of waggon was adopted after the trial and failure of the heavier description still in use in France and England. Five waggons, being types of those used during the American War, are exhibited. Of these the most interesting is

The Howard ambulance waggon, a light, two-horse, four-wheeled carriage, designed to carry four persons (two recumbent and two sitting), or eight sitting, besides the driver; it is said to weigh 1200 lb. The body of the waggon is mounted on elliptic springs, and the stretchers and mattresses are fixed on a second set of "counterpoise" springs inside the carriage, which are said to modify or altogether prevent concussions, and contribute greatly to the safety and comfort of the patients transported. There is also connected with the waggon a sling for the suspension, if necessary, of wounded limbs. The cover is of canvas, and admits of perfect ventilation. The stretcher-mattrasses are furnished with rollers, so that the severely wounded are placed in and removed from the carriage with but little disturbance. This waggon does not turn in as small a space as desirable; the seats are not sufficiently wide or deep, and it is difficult to get into them.

Dr. Evans also exhibits a waggon, called "the Wheeling ambulance," of a kind extensively used by the Government of the United States during the war; but with improvements proposed by Mr. Perot, of Philadelphia. The improvements comprise the application of springs of caoutchouc attached to levers springing from the axle-trees, so as to give easy movement. Indiarubber springs are not, however, found to answer in very hot climates.

A waggon made by Brainard, of Boston, will carry four persons recumbent or ten persons sitting; and the example exhibited was used for hospital service for several months.

Another waggon is one of thirty given by the citizens to the firemen of Philadelphia, who volunteered to convey the sick soldiers across the city from the Baltimore to the New York station, a distance of four miles. Three thousand soldiers were transferred from station to station by these conveyances.

An American waggon (Rucker), shown in the agricultural machinery shed (Avenue Suffren), is worthy of notice. It differs in some details from the Howard ambulance waggon; and, in place of the "counterpoise" springs inside, the waggon has a second set of springs underneath. It will carry four persons lying, and is said to weigh 1400 lb.

It will be noticed that all the American waggons are light, drawn by two horses, and driven from a seat. They carry from four to ten persons besides the driver.

The Italian committee of the "Société de Secours" exhibit an hospital waggon, designed and constructed by Mr. Locati, a carriage-builder at Turin. This carriage is an omnibus, with coupé, and driver's seat in front. The coupé will hold three persons sitting, and in the interior may be placed five patients recumbent—one on the floor and two on each side. The upper bed on each side can be lowered by means of a handle in rear of the carriage, so as to admit of the patient being placed on it more easily. The interior can also be arranged so as to carry five sitting and two recumbent or ten sitting. In boxes attached to the carriage are stowed the medicines, medical comforts, and utensils necessary for the number of patients conveyed, so that the conveyance forms a complete travelling hospital.

It is said that carriages constructed after this model were used to transport a large proportion of the badly-wounded volunteers who served in the Tyrol during 1866; and that, when used for ten persons, they were easily drawn by two horses.

An ambulance waggon exhibited by the Swiss committee deserves notice. It consists of a platform on low wheels, and can be arranged so as to carry four persons lying or twelve sitting. The carriage is well suspended, and is said to be light of draught; but it is a question whether the small front wheels would not make its motion very uneasy on broken ground.

The ambulance waggon fitted up for the head-quarter equipment of the King of Prussia during the campaign of 1866 is exhibited; but as it is specially fitted and adapted for only one person it is not a fair type of the conveyances for army service.

There are occasions when, owing to the absence of roads or tracks for wheeled carriages, it is necessary to employ pack animals for general army transport, and consequently for the conveyance of wounded. This was the case during the first occupation of Algeria, and it is still necessary to have recourse to pack transport for supplies sent to the advanced posts in that colony. In reference to this necessity, the French some years since organised a very complete field ambulance, the stores for which as well as the sick are carried on mules specially trained and selected for that purpose. The mule train for an expeditionary column of one thousand men usually consists of forty-nine animals, each led by an hospital attendant or soldier of the train; of these, sixteen are allotted for the conveyance of equipment and thirty-three for that of sick.

There are two kinds of mule-litters—the "cacolet," so-called from its resemblance to the contrivances used in conveying milk ("caque au lait") and the litières. The former is a kind of arm-chair, one being slung at each side of the pack-saddle, in which the sick or wounded soldier sits upright. The second is a couch similarly carried, in which the man lies down, and is protected from sun or rain by a hood.

Examples of "cacolets" and "litières" are exhibited by the French Government, by Dr. Evans, and in the collection of the "Société de Secours;" but this kind of transport is not looked upon as a model except in cases where wheeled transport cannot be made available.

For removal of wounded from the field of battle on cacolets, a large proportion of attendants and well-trained animals are required; and loss of time results from the operations necessary in placing the wounded on the animals, especially if the mules are in any degree restive. For transport on the march the motion of cacolets is probably easier than that of the old type of ambulance waggon, but not so much so as that of the improved models.

For the conveyance of invalids from the temporary hospitals which are established during a campaign to their homes or to the general hospitals, use has to be made of the ordinary transport waggons, by which the supplies of food, &c., are brought up for army service; it is therefore desirable to contrive arrangements by which such conveyances or railway carriages may be made fit for the conveyance of sick. With this view, it has been suggested that each invalid shall be provided with a spring litter, to be placed in the waggon, or that the litters should be suspended in some way, probably by interior springs similar to those of the Howard ambulance waggon.

The Baden committee of the Société de Secours exhibits an arrangement for suspending the litters in railway carriages; and M. Locati, of Turin, submits a plan for fitting up a third-class carriage as a hospital waggon.

The most interesting example of this class of conveyance is a model of the hospital railway cars used by the United States Sanitary Commission, and exhibited by Dr. Evans. The model (on scale of ½) is a facsimile of a "sanitary car" in all its details, and shows couches, dispensary, closets, means of heating and ventilation; externally, it represents an ordinary American passenger-

THE PARIS INTERNATIONAL EXHIBITION.

MILITARY TELEGRAPHING AND SIGNALLING (CLASS 37).

car. The annexed drawing shows the mode in which the stretcher-mattresses were arranged.

In cold weather the cars were heated by stoves, and fresh warm air was introduced from ducts leading into the carriage near the stove.

MILITARY TELEGRAPHY AND SIGNALLING.

CLASS 37.

BY MAJOR A. LEAHY, R.E.

GREAT importance has at all times been attached to the arrangements for conveying intelligence with accuracy and rapidity during active warfare, but the influence of these arrangements on military operations has been largely increased by the use which may be made of railways in the movements and concentration of troops.

The introduction of railways for ordinary travelling and transport rendered necessary an improved system of signalling, and led to the development of the electric telegraph as being incomparably the quickest and most accurate means of conveying intelligence.

The English Government was the first to acknowledge the advantage which might be derived from using telgraphs for military communications; and an equipment intended to accompany the army while on the march was sent out to the Crimea in 1854. There was not, however, any opportunity of testing its fitness for that purpose, and the *matériel* was used for establishing communication between the British head-quarters and the ports of Kazatch and Balaklava. A light submarine cable was subsequently laid across the Black Sea from Varna, and the lines of telegraph were extended to the camps of the different divisions and to the trenches, so that there was uninterrupted telegraphic communication between the latter and London.

During the Indian mutiny the telegraph wires were laid so as to keep pace with the advance of the Commander-in-Chief, and were of essential service in keeping up communication with the seat of Government. In this case the necessary equipment was improvised under the direction of the late Lieutenant-Colonel Stewart, R.E., to whom great credit was accorded for the excellent arrangements made under difficult circumstances.

The French, during the war in Italy in 1859, turned the telegraphs of the country to account in keeping up communication along the line of operations and with their base. In the civil war in America the telegraph was very largely used by both armies. The advantages derived from the use of telegraphs during these wars has led to the formation of equipments specially adapted to military telegraphy and to the organisation of telegraph trains in nearly every European army.

The organisation of the military telegraph department of the British Army has not yet been completed; but the estimates of the present year include a vote for an experimental equipment; and it may be expected that ere long an established equipment and a proportion of telegraphists will be attached to every army division or mixed military force.

Although the electric telegraph possesses many advantages over other systems of conveying intelligence when the communications are secure, it is liable to interruption, and cannot be trusted in cases where the lines of wire pass through a country the population of which is unfriendly. It also requires some time, labour, and transport for establishing the first communications.

For these reasons it is frequently necessary to have recourse to signalling for communicating between bodies of troops, and no military telegraph equipment is complete without means of extending the communications by signals when there would not be appliances or time to lay down a line of wire.

FIG. 1.

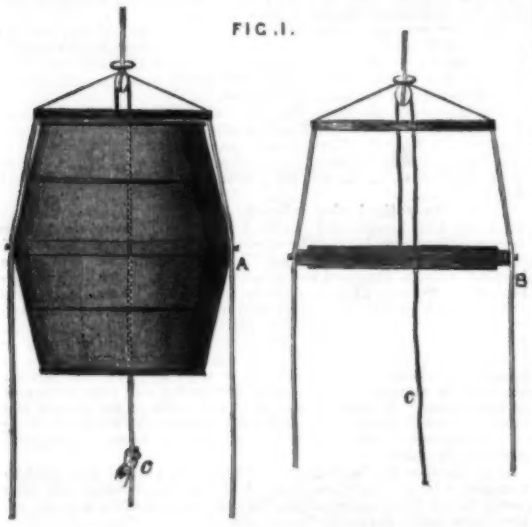
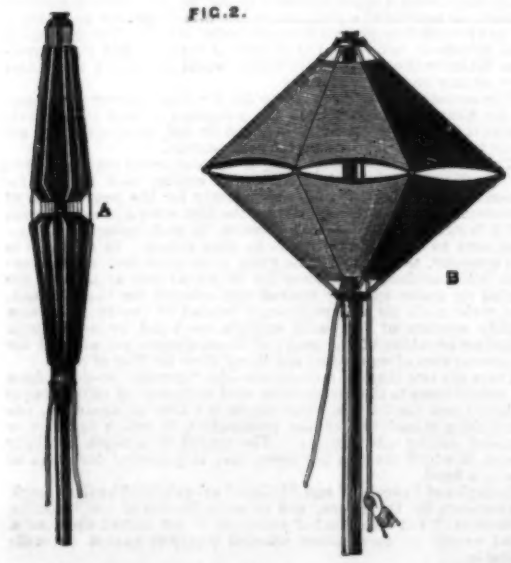


FIG. 2.



COLLAPSING DRUM AND CONES FOR SIGNALS BY DAYLIGHT.

FIG. 4.

PORTABLE SIGNALLING APPARATUS FOR SHORT DISTANCES.

For communicating between an army and fleet signals are indispensable.

Troops can be manœuvred by means of signals, and their application for this purpose will, it is expected, become more general, as, owing to the distance at which armies may now be brought into action and the length of the lines of battle, it will probably be found that orders, preliminary to the engagement, can be conveyed more conveniently and expeditiously by means of signals than through the agency of mounted officers or orderlies. Signalling was extensively used for this purpose during the civil war in America.

A regular system of signalling is now being devised for use in the British Army, and it is intended that a proportion of men in each regiment or corps shall be instructed to act as signalmen.

There are two examples of signal apparatus shown in the Paris Exhibition:—

1. The Austrian signal-post, in the military collection of that country, Gallery No. 6.
2. Bolton and Colomb's flashing signals, in the British Admiralty shed.

The Austrian apparatus consists of a pole about 20 ft. high, having three discs of about 9 in. diameter, arranged in the form of an equilateral triangle at the top. The two lower discs are moved by one handle and the top disc by another, so as to turn either surfaces or edges to the front. The message is transmitted by displaying the surfaces or edges in various positions. It is claimed that the use of three discs facilitates the communication; but, on the other hand, an alphabet different from the Morse or other telegraph alphabet in common use has to be employed.

Bolton and Colomb's signal apparatus gives the means of conveying signals by long and short flashes, corresponding with the dots and dashes of the Morse alphabet. The system is equally available for land and sea service, and, with good operators and apparatus, messages may be transmitted with considerable speed; seventeen words per minute is stated to have been attained.

It will best be explained by the following extracts from the printed descriptions:—

"Flashing signals are made by the motion of any single object. In most instances the object is made to appear and disappear, and in others it is made to change its position, so that one position shall represent the appearance and the other the disappearance of the object. The symbols are determined by successive appearances and disappearances at regulated intervals, constantly recurring after a fixed pause, in a manner precisely similar to those of revolving or flashing lights in lighthouses."

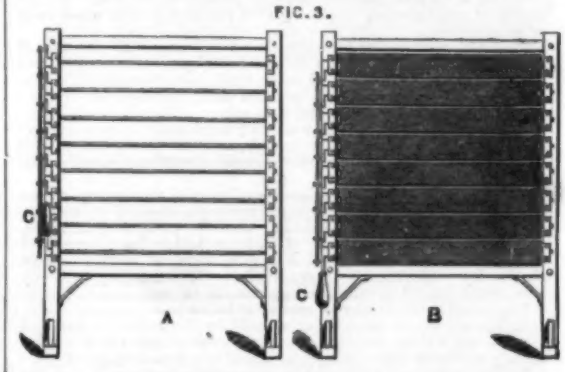
"The appearances of the object are termed 'flashes,' and are of two lengths, termed respectively 'short' and 'long' flashes, which are used in combination to express the signs required. The long flash is usually about a second and a half in duration, and the short flash about half a second."

In the daytime the different apparatus shown in figures 1, 2, 3, and 4 may be used, under the varying circumstances of service. At short distances no apparatus is necessary, the simple waving of the arm, with a hat, flag, handkerchief, &c., being perfectly efficient; or the flashes may be represented by long and short sounds.

At night signals are made by the exposure and obscuration of a single light; the lengths of the intervals and flashes, and the period of their recurrence, may be regulated by machinery, in order that the signals may be absolutely free from error, which is never the case when they are dependent on the skill of the operator, and also to facilitate the continued repetition of the signals which in naval signalling is often necessary.

"In all cases the signals are made in precisely the same manner; so that an observer, having seen one apparatus in use, may be able to read and make signals with every other description of apparatus without further instruction." (See Illustrations on page 248.)

FIG. 3.



SHUTTERS FOR SIGNALS BY DAYLIGHT.

Fig. 1 represents a collapsing drum, which is used for distant and other signals in the daytime; A shows the drum extended by the line *c*, representing an exposure of the light; and B the drum collapsed, representing a concealment of the light.

The drum is to be hoisted where most convenient; 20 ft. is a sufficient height for the most distant signals; it is self-collapsing, and is worked by hand.

Fig. 2 represents an apparatus which consists of a pair of collapsing cones, on a staff, fitted on a principle resembling the opening and closing of an umbrella. A shows the apparatus closed, and B open.

Fig. 3 represents an apparatus to be used for permanent stations. It may be made of any size, corresponding to the distance required to transmit signals. An apparatus exposing a surface of 72 sq. ft., as at B, gives a range of fifteen miles in clear weather. It consists of a series of shutters, each working on a pivot, and all connected together in such a manner as to move simultaneously by the motion of the handle *c*. When the shutters lie horizontal, as at A, representing the obscured state of the light, an observer sees nothing, as, at a short distance, the slight skeleton frame is unseen; but when the shutters lie vertical, as at B, representing an exposure of the light, a very large surface comes into view. Signalling by this apparatus may be carried on with great rapidity, as the appearances and disappearances may be produced a hundred times in a minute with ease. If this apparatus is used against a dark background, the shutters should be kept whitewashed, and the framework painted black; otherwise, the shutters are to be painted black and the framework white.

Fig. 4 represents an apparatus to be used for short distances, when great portability is desirable. It consists of a light disc on a handle, having a cross piece at its extremity. The disc is painted white on one side and black on the other, so as to employ either side, according to the nature of the background. A represents the disc edge-on to the observer, meaning an obscuration of the light; B represents the flat side towards the observer, meaning an exposure of the light.

The disc is held as represented in the figure, and is turned by the right hand; whilst a small piece of tubing, held by the left, forms a bearing for the staff to work in. The range of this apparatus is about three miles.

For signalling at night Captain Bolton has produced a portable apparatus, which is effectual for distances up to twenty-five miles. It consists of a lamp provided with a lime light, and a combination

CAPTAIN COLOMB'S SIGNAL-BOX FOR WORKING THE LIME-LIGHT.

THE PARIS INTERNATIONAL EXHIBITION.

MILITARY HOSPITAL AND BARRACK BUILDINGS (CLASS 37).

of lenses for directing the rays on any desired point. The light is a modification of that which was many years ago used for trigonometrical observations, in connection with the Ordnance survey, and known as the Drummond Light. There is a movable disc for displaying and obscuring the light, acted on by a lever, which may be worked by hand or by means of an apparatus, devised by Captain Colomb, R.N., called a signal-box; and of which the following is a description (see Illustration on page 248):—

The signal-box contains a barrel or cylinder, which is turned by means of the handle D. The surface of the barrel is occupied by pins and bars representing several series of flashes, each representing a number or letter. They are so arranged that after the first series has passed any point a slight interval elapses before the next commences, and so on. At the end of the last series and commencement of the first there is an interval amounting to a fourth of the circumference of the barrel. The object of these intervals is to separate the series from one another, and, as every signal is continuously repeated till answered, the long interval is required to distinguish the beginning and end of the message transmitted.

Parallel to the barrel is an iron bar, upon which keys travel horizontally; and above the bar there is a flat brass plate, termed the director, on which each series of flashes is distinguished, and slots are placed opposite each series for the reception of the keys. The revolution of the barrel causes the pins on its surface to operate on the keys, which transmit their motion to a lever, and through the line G to the lamp-shade.

It is, therefore, only necessary to place the keys in the slots corresponding to any required set of flashes and then to turn the handle continuously to produce a revolving series of flashes, corresponding to the setting of the instrument, with unfailing accuracy.

The apparatus exhibited is adapted to the naval code of signals, but the barrel may be constructed so as to work any code or alphabet.

Captain Bolton's lime-light, being obtained by the ignition of a piece of lime from the heat evolved by the combustion of oxygen and hydrogen gases, requires for its maintenance an apparatus by which the gases will be produced.

He has exhibited this apparatus in a portable form, but it is desirable that a light which is capable of being produced in a more simple way should be devised.

With this object Captain Bolton has also proposed and exhibited a lamp in which the light is produced by the combustion of magnesium wire supplied to a focus by means of clockwork. The apparatus, as exhibited, and the wire are expensive.

If a satisfactory light be produced it may be expected that the flashing system of signalling will be more extensively applied, and it is, therefore, very desirable that the attention of manufacturers should be directed to the subject with the object of devising a light which shall be powerful, simple, portable, and cheap.

A light produced by the combustion of petroleum has recently been proposed, for which is claimed the foregoing qualities.

An application of the electric light to the purpose would appear desirable; but, as at present produced, the necessary apparatus is wanting in cheapness and portability.

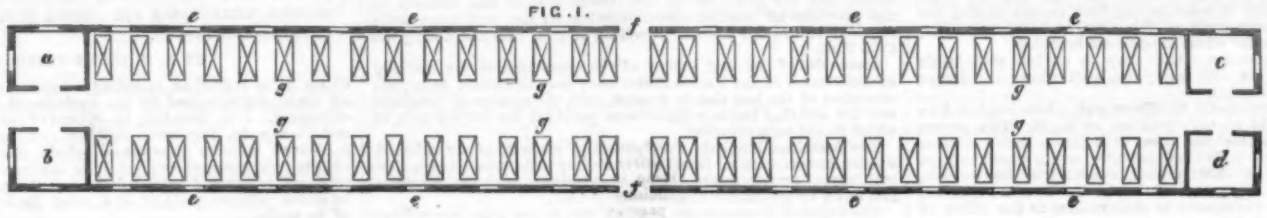
Lights of the character suitable for distant signalling may be applied to another military purpose—viz., that of illuminating an enemy's works at night. This, heretofore, has been usually effected by means of light-balls—viz., oblong projectiles, consisting of a skeleton iron frame, covered with canvas, filled with an inflammable composition, and wooded over what may be distinguished as the cylindrical part with cord or twine, vents being provided at the upper end for the composition to run out of.

These balls are projected from a mortar, so as to fall on the spot which it is desired to observe. They give, however, but a limited sphere of illumination, and are comparatively useless if they roll into hollows in the ground; if they fall into marsh or mud they can be easily approached and smothered.

To remove this objection Colonel Boxer, R.A., devised a very ingenious apparatus, called the parachute light-ball, an example of which is shown in the Royal Laboratory case (British war material). The light is inclosed in a spherical paper case, and is projected from a mortar. It is made to burst, when it has attained its full height, by means of time fuze and a small charge of powder; and the light, which is ignited at the same moment, remains suspended in the air for some time, being kept up, or rather retarded, in its descent by a calico parachute, which is folded up in the paper case, and which opens as the light begins to fall. There is, however, some uncertainty attaching to the use of this apparatus.

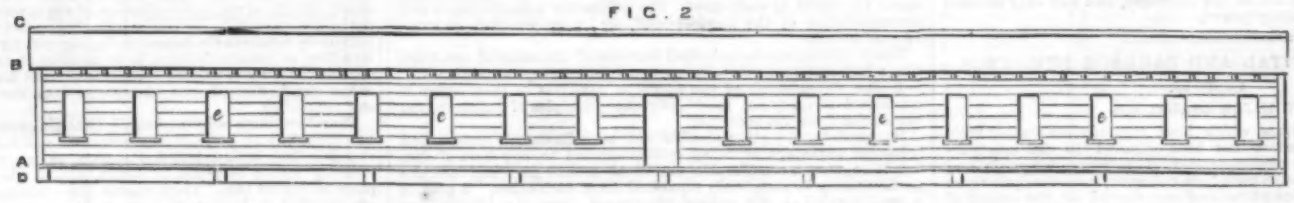
Star shells—i.e., paper shells filled with pellets of a brilliantly-burning composition—have been tried successfully, and are likely to be used.

FIG. 1.



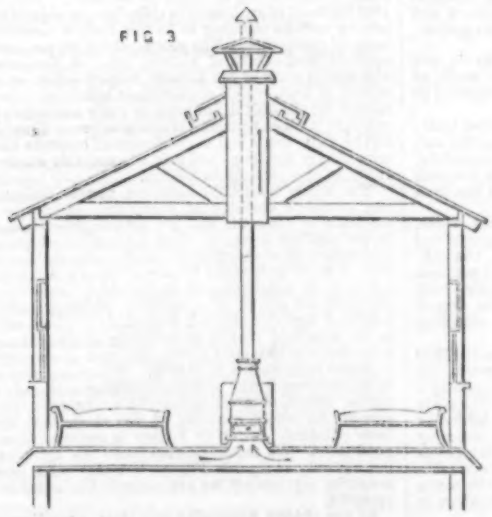
PLAN.

FIG. 2



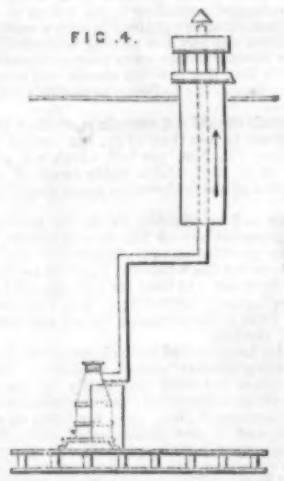
ELEVATION.

FIG 3



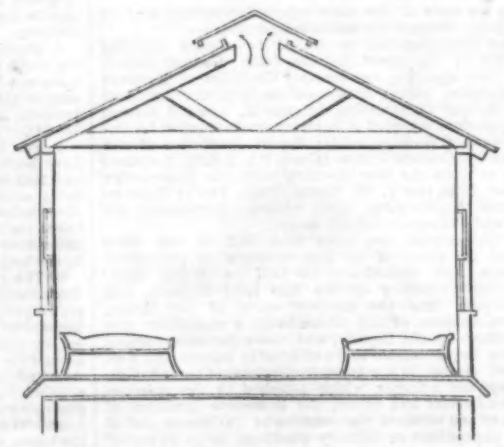
SECTION SHOWING THE MODE OF VENTILATION IN WINTER.

FIG. 4.



SIDE VIEW OF STOVE.

FIG. 5.



SECTION SHOWING THE MODE OF VENTILATION IN SUMMER.

HOSPITAL PAVILION OF THE CONSTRUCTION ADOPTED BY THE UNITED STATES GOVERNMENT.—SEE NEXT PAGE.

During the American War, lamps with reflectors were used, with the object of discovering working parties. By means of the Drummond light, placed at a distance of 1000 yards from Fort Sumter, the breach formed in that fort was illuminated, and admitted of an effective artillery fire being kept up, which prevented the Confederates from repairing it.

A lamp, with Drummond light and reflector, by which the ground surrounding an observing station can be illuminated, is exhibited in the Austrian military collection; and an effective apparatus of this description would be of great value during siege operations, both to the defending and attacking forces.

Military electric telegraphs may be considered under two heads.

First. The lines of communication constructed for temporary use during a campaign and used for conveying orders from the head-quarters of an army to the detached corps, and also for keeping up the communications with the base of operations. This class of telegraph usually consists of two parts—a "field equipment," designed to accompany the army and to lay the wires rapidly, so as to keep up communication between the several bodies of troops during the marches and manœuvres of a campaign; a "reserve equipment," to be used in maintaining the communications with the base of operations, and in repairing and extending the permanent lines in an occupied country.

Secondly. The permanent lines of telegraph used for connecting works of defence or military posts, and which may be required for notifying intelligence as to an enemy's movements, or with the object of regulating the ranges of artillery, firing torpedoes, &c.

Permanent lines of telegraph have been established in the principal English fortresses.

M. Madsen, the inspector of Government telegraphs in Denmark, has devised a scheme for measuring distances from the maritime defences of Copenhagen by signalling observations taken simultaneously at different forts, and are generally worked by military clerks or other officials, under the supervision of competent instructors. In these lines, portability not being an object, any good and simple description of instrument can be used. They should, however, be of a kind to transmit messages with rapidity; and it is further desirable that the messages should be recorded. Underground wires or air lines may be used, according to local circumstances, the advantage of the former being that they may be more easily concealed and protected from malicious injury.

The "field telegraph" equipment should have a military organisation and form a constituent part of an army in the field.

"The "reserve" equipment may be organised in time of war by the employment of civilian clerks and workmen, under such regulations and superintendence as the general officer in command may approve.

It is not within the province of this paper to state the relative technical qualities of the different kinds of telegraph instrument, wire, &c., as this will be done by the reporter on class 64. The following remarks must therefore be understood to have for their object the indication of the points in which the different kinds of apparatus are interesting in regard to their application to military telegraphs.

The Austrian Government shows (Gallery No. 6) drawings and examples of the field telegraph equipment adopted in the military service of that country, which are of great interest, as being the only ones of the kind exhibited. The equipment is light and portable, and is said to answer for laying down the lines of wire very rapidly. It is made up as follows:—

1. An office carriage, an example of which is shown, containing the instruments, batteries, &c. The carriage is of the cabriolet form, and conveniently arranged for writing, &c. It is intended to be drawn by two horses.

2. Wire, poles, insulators, &c., which are conveyed in ordinary waggons drawn by four horses. The wire is copper, about No. 16 (Birmingham) guage, and weighs about 70 lb. per mile. The poles are about 20 ft. long, 2 in. diameter, slightly tapering, and are carried, in the proportion of one for each hundred yards of wire. The poles are provided with round-headed iron spikes, to which gutta-percha insulators can readily be attached. A pole and insulator would weigh about 20 lb.

3. A hand-barrow, which is specially arranged to carry a vertical drum for laying out or coiling up the wire. The barrow can be wheeled by one man.

Plain wire is preferred over insulated wire, on account of its cheapness, lightness, and the facility with which it can be fixed and repaired.

Insulated wire can, on the other hand, be laid on the ground, so as not to attract notice; and it does away with the necessity for carrying a large proportion of posts. Insulated wires suitable for military telegraphs are exhibited by Hooper, Siemens (England), Mdme. Bonis, and Rattier et Cie. (France).

The cost of insulated wire very much exceeds that of plain wire. The weight varies with the degree of protection required; but a wire of No. 16 guage can be well insulated at a total weight of about 230 lb. per mile.

Hooper's cable consists of a metallic conductor, insulated, first, by a thin coating of raw indiarubber; then, by a mixture of indiarubber and oxide of zinc; next, by a coating of vulcanised indiarubber—the whole being subjected to a very high temperature. An outer protection of felt, tape, or hemp, tarred, is applied to land lines; and to this is added, for submarine purposes, a protection of iron wires.

Siemens' new cable consists of a metallic conductor, covered with Chatterton's compound, then with a coating of vulcanised indiarubber, and over this plaited hemp painted with whitelead; copper tape is, when required, wound round the cable.

The French cables referred to are insulated by means of gutta-percha.

The instruments which may be used with military telegraphs are of the following kinds:—

1. Needle instruments.—2. Dial instruments.—3. Recording instruments.—4. Sounders.

The advantages claimed for needle instruments are that they are cheap, simple, portable, easily repaired, require but feeble currents of electricity, and are easily worked by battery power in a very portable form. It is not, however, always convenient to carry or use batteries. The instruments cannot be worked by an inexperienced person, and they do not leave a record of the message.

Dial instruments are frequently worked by magneto electricity, an important advantage in countries where voltaic batteries are liable to freeze. They are very portable, and can be used by any intelligent person without special training. The disadvantages are the cost, the slowness of communication, the necessity for more perfectly insulated wires when a magnetic current is used, and the absence of any record of the message.

Examples of dial instruments are exhibited by Wheatstone

(England), Siemens (England and Prussia), Guillot and Gatchet (France), Marcus (Vienna), and many others.

Marcus, of Vienna, exhibits a dial instrument, with seat and table so arranged that the whole can be readily carried by a soldier. Recording instruments suitable for military purposes are shown by Siemens and by Digney Frères, Paris. They are both of the Morse type, but with polarised electro magnets; and with each the message is recorded in ink by dots and dashes on a slip of paper which is gradually unwound by clockwork.

The Austrians also use a Morse recorder with clockwork in a compact form.

Recording instruments possess advantages over others in accuracy and speed, as well as in the more important matter of leaving a record of the message. The greater responsibility which devolves on the operator when messages are recorded tends to care in their transmission, and in military telegraphs this is most important. They can also be used on lines charged either with voltaic electricity or by currents induced from permanent magnets. They require, however, more perfect insulation than the needle instruments, and are not so easily repaired if once out of order.

Siemens exhibit a contact plate to be used with their recording instrument, by means of which a person unacquainted with the Morse alphabet can send messages in a perfectly accurate manner by simply passing a steel pin connected with the circuit along grooves in which the contacts necessary to produce the required letters are arranged. The development of this arrangement will very much simplify the use of recording instruments of the Morse type.

Of the "sounders" exhibited, the most interesting is a small instrument bearing the name of J. D. Caton, Illinois (shown in the American Court, Gallery No. 3), contained in a box measuring about 7 in. in length, 3 in. in width, and ¾ in. high. It is said to be used by guards on railway-trains; and by attaching the instrument at any point on a charged line, messages can be received and transmitted, or a message passing through the line can be read. Anecdotes have been told of lines having been tapped during the American War with instruments of this class, so that information was obtained by persons for whom it was least intended.

Siemens exhibit a sounder, which may be worked with feeble currents of electricity, or with badly-insulated wires; it is larger than the American instrument.

Sounders may be very useful to officers and others employed to reconnoitre a fortress or enemy's position at night. The person reconnoitring would in this case take with him a small sounder attached to a coil of very light insulated wire, which would be kept constantly charged with electricity from a battery in the trenches, or other safe position. By means of the sounder he could transmit information as to his movements or observations to the officer in charge of the covering force.

The disadvantages of sounders are that they require skilful operators, leave no record of the messages, and can only be used on lines charged by battery power.

MILITARY HOSPITAL AND BARRACK BUILDINGS.

CLASS 37.

BY MAJOR LEAHY, R.E.

DURING the twelve years which have elapsed since the last Paris Exhibition great attention has been directed to the construction, equipment, and administration of military hospitals and barracks; valuable statistics have been collected, important principles of construction have been enunciated and carried out, the system of hospital administration has been improved, and greater importance has been attached to sanitary science in all its branches. It is not proposed in the present report to do more than indicate, in a very general way, the improvements illustrated in this Exhibition of 1867, and for further particulars reference should be made to the published reports of the commissions which have inquired into the subject.

The following are some of the more interesting reports, &c., on barrack and hospital construction and administration:—

Report of the Commissioners appointed to inquire into the Sanitary Condition of the Army (London, 1858); General Report of Commission for improving the Sanitary Condition of Barracks and Hospitals (London, 1861); Etude sur les Hopitaux Considéré sans le Rapport de leur Construction, &c., par M. Armand Masson (Paris, 1862); Suggestions in regard of Sanitary works required for improving Indian Stations (London, 1864); Report descriptive of the Herbert Hospital by Captain Galton (late R.E.), F.R.S., Assistant Under Secretary of State for War (London, 1865); La Commission Sanitaire des Etats Unis, par T. W. Evans (Paris, 1867); Notes on Nursing, by Miss Nightingale, third edition; Regulations for Medical Officers and Purveyors (British Army).

The English Government has, more than that of any other country, directed its attention to improvements in permanent military hospitals and barracks. In 1857 a Royal Commission, under the presidency of the late Lord Herbert, was appointed to inquire into the sanitary state of the Army, and on the recommendation of this Commission a committee was nominated to follow up the inquiry, and make recommendations in detail as to the improvements to be effected in barrack and hospital construction. Acting on the recommendations, of these bodies, and supported by the influence which attached to the opinions expressed by Lord Herbert and others, the successive Ministers of War have proposed and obtained the sanction of Parliament and of the nation to an expenditure on military dwellings far in excess of that which had been incurred prior to the Crimean War, and the result has been that in no country are the troops, especially the private soldiers, so well housed as in the new hospitals and barracks which have been constructed within the last ten years.

A building has been constructed at the expense of the British Government in the park of the Paris Exhibition which affords examples of some of the approved types of arrangement in permanent barracks; and, although the structure is of a temporary character, and has been roughly finished, it will give an idea of the principles adopted, and of the nature of the accommodation now provided for British soldiers.

In the collection of Dr. Evans, and in the American section of the main building, gallery No. 2, will be found models and plans of some of the general hospitals established by the United States Government for the reception of soldiers disabled during the civil war of 1861-4.

In the Austrian section, gallery No. 6, of the main building will be found plans of a new barrack now being constructed at Vienna.

The French Government exhibit models of most of the barrack buildings erected at the camp at Chalons; but models of hospitals do not appear among the selection.

The question of hospital construction and army sanitary administration has not, however, been neglected in France. The earlier examples of the type of building which is now most generally approved are to be found in the Lariboisière Hospital in Paris, and in the great military hospital at Vincennes.

The statistics of the French army in Algeria show that the improvements which have been introduced since 1848 in the sanitary and hospital arrangements of that army have reduced the mortality to one third the proportion which formerly obtained.

In England the proportion of men constantly sick is, at certain stations where improved constructions have been adopted, less than half the average number under treatment before accommodation was provided on the scale now considered necessary.

In India the sanitary improvements which are now being carried out promise to produce a most important effect on the health of the troops employed in that country.

These and other advantages are due to the interest taken in sanitary matters, and they must be satisfactory, not only to the scientific men by whom the questions have been investigated, and who have proposed the improvements, but also to the statesmen and others who have urged the subject on the consideration of Governments.

It ought, also, to be satisfactory to the public bodies or nations by whom the necessary funds have been provided, to know that the expenditure incurred has produced good results.

The leading sanitary principles to be observed in the construction of military hospitals and barracks have been laid down as follow:—

1. Avoid the collection under a single roof of too large a number of persons—especially of sick.
2. Give ample floor and cubic space.
3. Provide abundant ventilation direct from the outer air.

The position of a barrack must primarily be determined by military considerations, and that of the accessory regimental hospital is generally regulated by the site of the barracks.

The advantages to be sought for, and which should not, without sufficient reason, be dispensed with, are:—

1. Avoidance of marshes and stagnant water, which might give rise to malaria.
2. Abundant water-supply.
3. Sufficient elevation for drainage to an accessible outfall.
4. Porous subsoil.
5. Ample space, not only for the healthy disposal of buildings, but also for exercise and recreation.

The structural arrangement of military buildings should provide for the maintenance of discipline and for administration under military regulations; but in the construction of hospitals the main object sought—viz., the recovery of the largest number of sick men to health in the shortest possible time—should never be lost sight of. Hence if, for very special reasons, a barrack be placed on a site which is not, or cannot be made, healthy, the possibility of placing the hospital elsewhere should be considered.

The principles which govern the construction of permanent buildings can generally be more or less applied in the field; and, if a pressure for hospital accommodation should arise, it will be better to provide temporary structures, arranged in accordance with recognised sanitary principles, rather than to occupy houses which do not fulfil the conditions requisite for the preservation or restoration of health.

This was the opinion of the sanitary commission of the United States, and was acted on by the Government of that country, in the provision of hospital accommodation on the very large scale required to provide for the reception of men disabled during the Civil War.

Some idea of the vast extent of the operations of the sanitary administration of the United States army may be formed from consideration of the fact that in August, 1864, the number of hospitals was 214, and that accommodation was provided for 133,800 beds, of which 97,751 were occupied.

The American hospitals were generally made up of a number of wooden huts containing from thirty to sixty beds, the construction and general arrangements being in accordance with the principles laid down by the British Commission of 1857.

The annexed Illustrations, page 249, will, better than any written description, convey an idea of the mode of construction adopted. It represents only a single ward. The number and arrangement of wards are varied in each case. The offices for administration and accommodation of the hospital staff, &c., were provided in separate structures.

The following are the principal features of the mode of construction which has been generally approved for military hospitals:—

1. The arrangement of the wards in pavilions is that which is considered to carry out most fully the principles of isolation and ventilation from the outer air.

Hospitals for any given number can be built on this system, and it has the advantage of being readily adapted to any form of site, but it requires a considerable extent of ground in order that the pavilions may be completely separated from each other. A plan of a small hospital on this system is annexed. (See the Illustrations engraved, page 249.)

2. General hospitals should be made up of a number of independent pavilions, arranged according to the nature of the ground, and connected for administrative purposes in such a manner as to prevent the emanations from one pavilion passing into another.

3. No pavilion should contain more than two floors of wards, and it is very desirable that the pavilion should run north and south, so that as large a surface of the building as possible may be exposed to the sun.

4. Hospital wards should not contain more than thirty-two beds; the width should not be less than 24 ft., the height 14 ft.; the wall space not less than 7 ft. 3 in. per bed, which will give a superficial area of not less than 87 ft. and a cubic space of 1200 ft. for each patient. In tropical climates the cubic space should not be less than 1500 ft.

5. For lighting and ventilating wards the arrangements which have been recommended are as follow:—Windows, to open at top and bottom, to be provided on opposite sides of the wards, the beds being arranged between the windows. Inlets to be provided between the windows for fresh air, and flues for carrying off heated air—both inlets and flues being near the ceiling. The total sectional area of the outlets to be from 10 to 15 square inches per patient, according to the heights of the flue.

6. The grates for hospital and barrack purposes shown in the War Department building deserve special attention. These warm the rooms partly by direct radiation and partly by warming slightly a large mass of fresh air taken from the outer atmosphere. The air is led, by means of horizontal flues, to a fire-brick chamber behind or around the grates, and thence disseminated through the rooms by flues and inlets arranged for the purpose. In hospitals the grates should, if possible, be placed in the centre of the ward, the smoke-flue being carried horizontally under the floor, and the flue to warm fresh air admitted along its side and led to the fire-brick chambers in the stove, whence it passes into the ward.

7. Suitable offices should be provided for each ward, the closets and sinks being of the best construction, efficiently drained, and cut off from the wards by a ventilated lobby.

An arrangement of a building with this object is shown in the type of a ward which forms part of the building erected in the park by the British War Department.

8. Among the important items of hospital construction must be classed the apparatus for cooking, which will be noticed in the report on class 20.

9. The walls and ceilings of wards should be lined with parian cement or other material which will not absorb moisture containing organic matter, and which can be cleansed by simple washing.

10. The windows of wards should be double, or glazed with plate glass, for the purpose of saving heat.

11. The upper half of the doors in large wards should be glazed, so as to facilitate inspection.

12. It is desirable that hard wood should be used for floors doors, &c.

The sanitary principles which govern the construction of wards for the reception of sick are also applicable to barrack-rooms intended for occupation by a number of men in health, the details should therefore be arranged with reference to the numbers to be accommodated and the amount of expenditure which it may be intended to incur.

It is desirable that, in each country, a unit of size should be laid down for barrack-rooms, the numbers accommodated bearing a certain proportion to the strength of a regiment or corps; and that barracks or any given size should be constructed by simply increasing the number of units.

The following are details of some of the improvements which have been effected in barrack construction within the last few years:—

1. Barrack-rooms are constructed to contain from twenty to thirty beds, with a wall space of not less than 5 ft. and a cubic space of not less than 600 ft. per bed; the height of the rooms being from 11 ft. to 12 ft.; breadth, 20 ft. to 22 ft.; windows, equal to about half the number of beds, arranged on opposite sides of the room.

2. Sergeants' rooms open from the passage or landing leading to the barrack-room; and at one end of the latter, and separated from it by a ventilated lobby, are placed the necessary ablution-rooms, &c.

3. The means of ventilation and the lighting of barracks generally have been very materially improved. Kitchens, cleaning-rooms, and offices are built away from the barrack-rooms. Cooking-ranges of improved construction, which consume a small quantity of fuel, are provided, and the men are instructed in cooking by sergeants specially trained for the purpose.

4. Day-rooms, well lighted, plainly but comfortably furnished, and supplied with games, newspapers, &c., are provided. The day-rooms are, in the latest plans, placed near the canteen, and liberty is allowed, within reasonable bounds, for recreation and for obtaining refreshment, so that soldiers are no longer driven to resort to public-houses. Facilities are afforded to the troops for managing their own canteens and for appropriating the profits to regimental improvements.

5. Schools, workshops, and drill-sheds are provided. Gymnasia are being gradually constructed in all large barracks, gymnastic exercise being made a part of the ordinary drill.

6. Special quarters are constructed for married soldiers, and also houses and apparatus for washing linen.

In respect of cavalry stables, a consideration of the various existing buildings has led to a recommendation that the construction indicated in the annexed plan should be adopted as that best suited for preserving the health of horses. The characteristics of this plan are:—

1. An arrangement of the stalls which admits of the perfect lighting and ventilation of each. The stalls are usually arranged on each side of the building, with windows above each, and air-bricks, admitting the outer air, are placed at a low level so as to afford fresh air to the horse when lying down at night.

2. Open roofs, partially glazed, and with ventilators in the ridge. Lofts or other constructions over the stalls are objected to as interfering with ridge ventilation.

3. A wide central passage between the stalls.

4. Provision of impervious paving, drainage being effected by means of shallow open drains with rapid slopes, and not by covered drains or cesspits.

Two stalls of approved construction may be seen in the British War Department building.

FURNITURE, CLOTHING, AND FOOD, FROM ALL SOURCES, REMARKABLE FOR USEFUL QUALITIES COMBINED WITH CHEAPNESS.—CLASS 91.

BY R. H. SODEN SMITH, ESQ.

CLASS 91 is defined as including Furniture, Clothing, and Food of all kinds, distinguished by the qualities of utility combined with cheapness. It is, therefore, an epitome of the important groups 3, 4, and 7—namely, furniture, clothing and personal ornament, and food—and includes thirty-three whole classes, and occasionally objects from some others; but it is distinguished from these, and rendered in some degree definite, by the price being required to be stated with every object, as a point for consideration in judging of its merit.

The importance of the objects forming class 91 is too obvious to require much comment. The abundance and the perfection of their supply test the advance in civilisation of any country; the home life of the bulk of the population can be judged of by their use; and, if a comparatively comfortable home-life be secured, by food, clothing, and furniture, at reasonable price, it is needless to repeat here the trite conclusions—which are not the less important for their triteness—as to the moral effect of such advantages upon the humbler classes of any population.

Therefore, these objects of small domestic economy, apt enough to be overlooked or despised in a universal exhibition, have, notwithstanding their little external attraction, an importance of which the ordinary visitor may not be aware, and of which it is not out of place to remind him. They possess little external attraction; they are wanting in beauty of form or in excellence of colour, and yet they surround the daily life of the mass of our people, almost insensibly influencing the eye and the mind. It is, moreover, notable that the want of art-beauty in these homely objects is most conspicuous among nations claiming to be the highest according to the present scale of civilisation. The people whom we are content to regard as semi-civilised—Oriental nations, tribes of Northern Africa, races in the distant parts of the Russian Empire—show an understanding of colour, at least, which renders their otherwise rude household goods models for the skilful European to study and strive to imitate. Art is not thus instinctive among Western nations. The objects that minister to the daily wants and conveniences of common life are for the most part wholly wanting—and it is a lamentable want—in every quality that can give pleasure to the eye.

The whole household furniture, carpets, fittings, objects of daily use, complete clothing of young and old, may be selected from the contents of class 91, and yet not one object found which ministers in the smallest degree to that art-instinct which is gratified by the commonest productions of Oriental workmanship; neither colour nor form is truly understood by any of those who have contributed their quota to the heterogeneous series which forms this class. Utility is the professed object of everything exhibited; and, while it may be admitted that this object is frequently attained with ingenuity, it is to be regretted that in its necessary attainment the workman never even deviates into good taste or strays as it were by accident into the slightest appreciation of beauty. Where any exception can be made to this censure it will be found hereafter studiously noted. A French writer, indeed, observes, as one of his conclusions from the consideration of the whole contents of the class, that cheapness has not been obtained, as far as France is concerned, at the expense of good taste. We should be glad could we agree in his conclusion; but not only as regards France, but also with respect to all other countries represented, we are compelled to arrive at one entirely the opposite.

In the objects composing this class, according as they are furniture, objects of domestic use, or clothing, there is room for taste to display itself, notwithstanding the essential requirement of cheapness, either in general outline, as in pottery; in colour, as in carpets, mats, and clothing; or even in raised surface ornament, as in objects moulded or cast. Among Oriental nations what may be called an instinct of art-feeling guides their work conspicuously in colour, and to a lesser degree in the other sources of beauty. It is not so among the most civilised Western nations—not so in France, any more than elsewhere. The common combinations of colour in cheap objects are as false and painful as notes out of tune in music; and the surface ornament is meretricious in character and inappropriate in application. Where traditions of Orientalism still exist, as in Spain, Portugal, and Sicily, art lingers upon household objects—the pottery, the matting, and parts of the clothing. Where manufacture has wholly triumphed in rapidity, certainty, and cheapness of production, the results are usually astonishing examples of the power of making common and really useful objects hideous. In one manufacture at length—namely, in pottery—a step beyond this is beginning to be gained. In addition to the triumph of manufacturing skill, producing a body and a glaze excellent for everyday use, form is occasionally considered, and even colour and decoration that can be commended begin sometimes to stray downwards to the home furniture in stone and delft ware of the humbler dwellings. This is a pleasant augury for the future. The slightest infiltration of art-feeling is a gain; and we may, perhaps, look forward to a time when household furniture can be cheap and yet cease to be an eyesore, and when the costume of ordinary life will no longer be absurd in form—take a swallow-tailed evening coat, for example—as well as wanting in every quality that can combine usefulness with beauty or grace.

In the following observations on the objects exhibited, the order in which the various countries are mentioned, and the numerical references appended to exhibitors' names, are in accordance with the French catalogue.

FRANCE.

France is more fully represented in class 91 than any other nation, upwards of 500 exhibitors being enumerated, and the variety of objects shown being so great that a bare enumeration of them would occupy much space. It was to be expected that France, on her own ground, would largely display objects of domestic use; but it is to be observed that, while in the British division of the catalogue a marked poverty and deficiency under class 91 is observable, this deficiency is rather apparent than real, the class being, in fact, absorbed in other groups, where, under pottery, glass, hardware, and textiles, especially woollen goods, examples are to be found superior in quality at their price to those of perhaps any other country. The British goods of cheap price have not been placed by

their producers in class 91, but are shown in their respective groups, where the fact of their low price, for which in some cases they have been chiefly shown, is of no avail, and does not receive notice. On the other hand, selections have been sufficiently made on the French side from the contents of groups 3, 4, and 7, containing furniture, clothing, and food, to form an extensive and important display of objects to which attention can be directed on the score of cheapness. As regards furniture, moreover, the park and detached building round the Exhibition are chiefly supplied by the French exhibitors in class 91, who have thus had a practical opportunity of making their productions known.

It has been remarked that the French objects brought together by more than 500 exhibitors are very various; they range, in fact, from metal bedsteads and garden-seats, through every article of male or female clothing and of personal use, to "articles de religion," musical instruments, and thence to preserved vegetables, meat, and wine.

This heterogeneous assemblage may, however, be broadly divided for convenience of reference, into certain groups; and the first will include furniture and objects of household use. Of what may be called garden furniture, chairs of painted iron, of good design, are shown by Letourneur (2), Mutet (11), and others. These are known to all visitors as being the seats chiefly used in the central garden and other parts of the Exhibition grounds and building. The seat is formed of iron ribbons curved a little upwards, and thus having sufficient spring to make the seat easy and comfortable. The cane chairs shown by Mutet, and also used for visitors and in the cafés, will be mentioned presently. Wooden garden chairs, the frame of tressel form, the seat and back of laths with ¼ in. between each, are shown by Auge, Auxerre; these, painted green, are priced 2s. each. The same exhibitor has light garden open palings, in rough sawn oak, at 4½d. per square metre (39½ in.); planed ditto at 6d.; painted at 8½d.; a flower-stand, painted, nearly 5 ft. long, of four stages, 5s.

Of household iron furniture, Massé, Paris (1), exhibits a spring mattress, constructed to turn over, so as to be put away into small space. It is made for use in hospitals and in boarding schools; but is inferior as a cheap object of its kind to that shown in Belgium, and alluded to below (Belg., 1720). Bray, Paris (6), has a steel cot of fairly good pattern and workmanship.

Of wooden furniture shown, the chairs by Lefebure, of Versailles (13), are worthy of notice. They are framed in wood, artificially curved, the back and back legs being of one piece, the seat-frame formed of another curve with a straight brace in front. The woods used are principally ash, beech, and walnut. The prices, varnished, stained, or otherwise finished, are 6s. 4d., 8s., and 9s. 6d. each. Furniture and other objects made of curved wood have been manufactured for nearly twenty years at Vienna, and these chairs are imitations of the Viennese work, but less perfect than the original. The invention originated with a carpenter at Boppart, on the Rhine; and for years he spent all his means in endeavouring to perfect his process. He succeeded, migrated to Vienna, and, more fortunate than many inventors, the workshops which he established there and in Moravia and Hungary turn out 700 chairs per day, and half Europe is now acquainted with the results of his invention. In the Austrian section are shown some curious examples of this wood carving: double spiral springs of six coils formed of one piece of beech, and arm-chairs, with framework of most ingenious curves; tires of wheels also are thus made in one piece. The present specimens from Versailles possess some, but not all, the advantages of his invention.

Cheap unpainted furniture is shown by Dieudonné and Co., Paris (9), of beech, oak, and deal; kitchen tables and chairs of deal, framed in beech. A chest of drawers of this manufacture, about 3 ft. high by 4 ft. wide, containing four drawers, costs 16s.; a dresser, with cupboard and drawers below, about 5 ft. by 4 ft., costs 19s. These are roughly made, and inferior to the work of similar material and general character exhibited in the Canada section and noticed below.

J. Viollet, Paris (12), also shows cheap chairs and other furniture. Hat and coat pegs of good make, in oak and deer's horn, are exhibited by Morisot, Paris (10). Chairs, arm-seats for three persons, baskets, work and other tables, made of rattan-cane, are shown by Mutet, Paris (11). They are strong from the toughness and elasticity of their material; are easy as seats, free from the chill and rust of iron, and light to carry; but the work is rough. A chair costs 5s. 8d.; a round table, £1. Chairs of this manufacture are employed for the use of visitors in various parts of the Exhibition building—a good test of their strength.

Niderer-Breeson, Paris (14), exhibits household furniture, with various coloured covers of plush, velvet, or reps. These sofas, arm-chairs, &c., are not to be commended, though cheap. They belong to a style of furnishing frequent in France, but which had better be disused than extended.

Miroy, Paris (19), shows, among many exhibitors of similar articles, chimney-clocks, candelabra, candlesticks, lustres, and other ornamental objects in gilt metal, bronze, and its imitations. These, and such articles of decorative furniture, are a very important branch of manufacture in Paris, and are cheaply produced: it is officially stated that they form the main trade of no less than thirty quarters of the city, from the Quartier St. Denis to the Faubourg St. Antoine; and it is certain that for many such objects Paris is the market which supplies a great part of the world—the carrying traffic being, however, chiefly in English hands. They have a certain air about them which captivates the half-educated eye, and which passes for good taste; but they are really, for the most part, beneath criticism on the score of art. They may, however, lay claim to considerable ingenuity and to some prettiness; and it is satisfactory to remark that an advance has been made in some directions in the style of these cheap objects, better designs having been imitated or adapted from ancient models or from the costly works of distinguished artists—thus candlesticks of zinc bronzed, the designs for which are partly Greco-Roman and sometimes not inelegant, are to be bought at a very cheap rate. Bisson, Paris (42), exhibits mouldings and various room and shop fittings, glazed cases, bronzed, gilt, silvered, and oxydised decorations; to all these the remarks above made as to the ordinary character of such showy objects are fully applicable; they belong to a pretentious and often tawdry style, which seeks to bring art down to its own level rather than make the effort to lift itself to the level of art.

The second group of objects may be taken as those of personal use.

Blondel-Duval (73) exhibit spoons and forks of buffalo horn, at 16s. 8d. per dozen. Nail and tooth brushes are shown by several exhibitors, but not in general of satisfactory quality; those of Boulenger (88) may, however, be noticed. Mathez, Vosges (198), exhibits spoons and various objects of domestic use of tinned iron; but all these, and white iron goods in general in this division, are inferior, price for price, to those produced in England.

Buttons, in horn and bone, and spoons of bone, are shown by various exhibitors; but not of quality or price that competes with other countries.

Bachond-Caillat à Nantua, Ain (69), exhibits turned work of boxwood, similar to that supplied to the London market from Northamptonshire. Powder boxes are priced 7s. per dozen. He also shows chessmen, games of loto, &c.; ninepins, those of boxwood, 6 in. high, are £2 11s. 6d. per gross of sets.

Odent-Cauchois (86) shows metre and half metre graduated rules, in ivory, buffalo, horn, and boxwood; half metre rules, in boxwood, are priced 2s. 6d. per dozen. Metre rules, less finished, the same price. Rules, squares, and other drawing appliances are shown by Larive (72), Oise; these are cheap. Crosnier-Fleury (82) and Odent (82) exhibit fans, which in point of price can, perhaps, be best compared with those supplied to the European market from Japan; but the subjects upon them want the skill in colour and also the quaint humour which the Oriental artists throw into their sketches; the French fans can be sold in retail at 2d. and 2½d.

Feathers and feather brushes exhibited by Loddé, Paris (64), and those shown by Thuiller, Paris (185), are well prepared: the soft feather brushes of Paris manufacture are superior for their price to any to be got at present in England. The points of the feathers are not harshly cut, so that delicate lacquered and varnished objects can be safely dusted with them. They are also well got up and dyed, and the smaller sorts are thus made, if not ornamental, at least not unsightly, in a sitting-room. The trade in these is very considerable in Paris, and they are now exported in some quantity.

Lanterns, candle-shades, and lamps are exhibited; they are of lacquered tin; a dark lantern, at 3s. 2d., of gilt metal and brass; a small brass lantern with bull's-eye, neatly made and very portable, for walking at night, is priced 2s. 9d.. Tin and lacquered ware is also shown by Sapy, Haut Rhin (27); but these, in comparison with English hardware goods, do not call for remark.

Of pottery and the cheaper kinds of ceramic manufacture, Dureault, Motte, and Co., Rhone (159), exhibit glazed earthenware printed in colours: plates at 2s. per dozen, and other articles in proportion. Gosse, Bayeux (151), shows hard porcelain, test-tubes, retorts, &c., which is stated to be of a quality that has been severely tested. In the annexe to the south-east of the park are larger collections under this head. Stoneware for ordinary use, beer and water-jars, ink-bottles, tobacco-pots, match-pots or boxes, &c., are shown by Bossot, Ciry, Saone et Loire (507); also liqueur vessels enamelled within, and other enamelled stoneware. The imitation of the texture and the applied ornament of the old Cologne Grés is successful in some of the cheap tobacco-pots. Boulanger exhibits, from the considerable manufactory at Choisy le Roi, Seine, a collection chiefly of semi-porcelain, marked 'granit." This is for the most part of good body, and well glazed. Dinner, soup, and dessert plates, printed in two colours, are priced 2s. per doz.; cheese-plates, 1s. 9½d.; dessert, with various subjects "de genre," printed in brown, 2s. 10d.; with monogram, 2s. 2d.; printed with well-designed pattern, covering the surface, of arabesques, trophies, &c., in lilac or blue, 4s.; dinner plates, ditto, 4s. 9d. Guerin, Gren-sur-Loire, shows a considerable collection and variety of "opaque porcelain," answering to our delft or glazed earthenware, but with a style and character very well marked. Some of the patterns on such ware may be regarded as traditional in France since the end of the sixteenth, and some since the beginning of the eighteenth centuries; others are reproductions from the fine glazed earthenwares of Rouen, Nevers, Moustiers, &c., and often very successful; the glaze, compared with original examples, is thin and poor in comparison, wanting the creamy quality which brings out the colours on some old Rouen and Marseilles specimens; but for objects of use or ornament in which an effort has been made to combine cheapness with effective colour and decoration, the manufacture of M. Guerin is to be commended.

It is not out of place to remark here that under the head of pottery, in class 91, there is no competition on the part of England, no selection having been made by our manufacturers of their cheaper goods; therefore, in commending the French examples a comparison is not intended. The pottery for household purposes produced by Doulton, of Lambeth, for example, is superior in quality of material, in style, and in its most excellent glaze to anything shown at similar prices by any other country; while, as regards the small objects of daily domestic use, there are hawked about the streets of London pieces of cheap pottery altogether better than anything shown in the whole Exhibition under class 91. A teapot, holding a pint, made with a skill seemingly unknown to the cheap manufacture of France, the dark brown glaze fit to bear heat, and the lid closely-fitted and deep ledged, may be bought at a street stand in London for 5½d.; its wholesale price in Staffordshire is small indeed.

Under the head of clothing the number of French exhibitors is considerable, especially of articles ready made; in these the Paris trade, as must be the case in every great city, is very extensive; and some of the establishments whose advertisements on a gigantic scale cover the spaces in Paris left by the Bureau des Démolitions have further taken advantage of the Exhibition to announce themselves.

The clothes of tweeds and other woollen materials exhibited by Jacob-Levy and Simon, Paris (367), are of good substance at their price, generally well cut and made up. A short tourist coat of Tweed is priced £1 4s.; a light grey tweed shooting-coat, £1 10s.; and other articles in proportion. Devillard and Devillette, Paris (366), are principal exhibitors in the class of children's ready-made clothes. Piotet, Paris (368), exhibits shirts of check, &c., blouses, and various calico and linen clothing of fair quality and low price. Cheap felt hats for the poorer classes are shown by Jouany, Bourganeuf, Creuse (398); light grey, at £1 1s. 8d. per doz.; darker, and somewhat inferior in quality, at 17s. 6d. Caps for boys, képis, such as are worn by young cadets, and generally by French schoolboys, are shown by several manufacturers; they are, for the most part, of good material and remarkably well got up for their price, the large demand making them cheap. Herold, Paris (405), shows caps in dark cloth, neatly laced with imitation gold or silver cord, at 2s. 6d. and 2s. 2d.; others of inferior cloth and with less ornament, at 1s.; some with gold-lace band, cording, and pattern over the peak in front, at 1s. 5d. Haas, Paris (407), also exhibits cheap caps. Straw plaited work from various parts of the south of France, the great seat in the country of the manufactory, is shown by several exhibitors, and taking, of course, price into consideration, is of respectable quality. Rey and Galan (Department, Tarn and Garonne) show straw hats of various styles of plait. Beehive-crowned hats of black and white plait, straw band, finished with straw edging, are priced 3s. 2d. per dozen. Leborgne and Co., Grenoble (426), exhibit straw hats and trimmings of plait of very good quality, and also at low prices.

Cloth fez caps are shown by Dujonequoy, Seine and Oise (237), of fairly good cloth, and of excellent colour. Boots, shoes, and slippers have many exhibitors, and in general the form and style is better than a similar cheap class of work would show in England; this advantage was to be expected to appear even in the most ordinary work, as French and many German boot and shoe makers greatly surpass most of our own in adapting their work to the form of the foot, and making their boots neat and at the same time comfortable. The difference in respect of neatness between the boots and shoes of the middle classes in London and Paris is very notable; on the other hand, French work is apt to be less solid, and respecting the important point of the probable durability of the materials in the specimens exhibited, no opinion can be expressed. Chollet, Seine and Oise (416), exhibits strong shoes, riding-boots, workmens' strong boots; the last are of stout brown leather, but it would scarcely seem waterproof. These are priced 9s. 4d. This is stated to be the retail price; if so, it is very cheap. Canvas shoes and slippers, somewhat similar to, but not so well-finished as our gymnasium shoes, are much used in France and Switzerland, and are convenient in warm dry weather, and very cheap. Latour, Paris (415), exhibits them, of rather rough work certainly, but at 1s. 8d. per pair; the better qualities at 2s. 6d. to 3s. 6d. Hempen-soled slippers, resembling the sandals frequent in Spain, mentioned below in the exhibition of Spanish objects, are much used in France, especially in the Pyrenean provinces, made with canvas uppers; these, of good quality, women's size, are shown by Sallos, Lower Pyrenees (413), priced 7d. per pair.

Indiarubber waterproof clothing, wrappers, overcoats, and leggings, of good material and make, is shown by Engrand and Co., Seine (319), and by Torrilhon, Verdier and Co., Paris (320). Duché and Co., Paris, the large manufacturers of shawls of Cashmere patterns, who exhibit under class 52 (16), show a class of goods here cheaper in style and material. These can only be judged of as regards quality and price by examination and comparison with other specimens; but so comparing them they will be found to be cheap, and they so much excel ordinary productions of low price that they merit having attention called to them.

The last of the groups into which we have broadly divided class 91 is food; and the collection exhibited by France is of considerable importance and variety.* Chocolate, of which the preparation is very extensive in Paris, and the consumption and exportation large, is shown by many manufacturers. That exhibited by Ibled and Co., Paris (452), and prepared with the aid of hydraulic pressure, is of good quality. Ménier, Paris, shows chocolate prepared in a variety of forms, also with much skill and success. It is from this manufacturer that many houses in London are supplied. A considerable variety of preserved vegetables are shown by twelve principal exhibitors; but their preparations require the test of experience to discriminate between them. Such vegetables are, however, much more employed in Continental cookery than in English, and with considerable success. In Holland and Belgium, as well as in France, winter dinners, and especially the preparation of soup, are much aided by these comparatively inexpensive kinds of food. Asparagus, celery, portions of artichoke, are shown seemingly well preserved, as well as carrots, peas, beans, kidney beans, cauliflower, &c. Besides these, which are secured for the most part in bottles, many exhibitors have tin cases of preserved meat and vegetables, fruits, pickles, vinegar; liqueurs and wines are also shown. Guillaut, Paris (437), exhibits cakes of gingerbread similar to those for which Amsterdam is noted. These are sold, according to quality, at 5½d. to 7½d. per kilogramme.

* It may be noted that the position of this collection is such that it may be easily overlooked, being wholly out of its order—if any order can be said to be even attempted, much less adhered to. The collection is shown in a separate small court, on a line with the cafés, and is entered from without the building. Another important section of class 91 is in a remote "annexe," on the extreme south-east of the park.

BELGIUM.

The objects shown are not numerous. They consist chiefly of textiles, and iron and wooden furniture. It would seem that the collection in class 91 suffers in the Belgian division, as it does on the English side of the Exhibition, by objects which might fairly have come within the scope of the class being shown in their special groups, without consideration of the question of their cheap production.

Lemaieur, Brussels (4), exhibits shawls, wrappers, and various woollen goods, tolerably exact reproductions of Scotch style and pattern, of good quality at their price; for example, a tartan shawl, not the cheapest make, about 5 ft. 6 in. square, is priced 6s. 6d.

Ruelens (1720 in Belgian catalogue) exhibits an iron spring bedstead, about 3 ft. 6 in. by 6 ft., efficiently constructed with ribbon instead of coil springs, thus gaining the advantage of a spring mattress. This is cheap (£1 4s.) Compare in construction with those noted under France (massé, No. 1).

Messrs. Cambier, De Blauw, and Verheyden exhibit chairs of cherrywood and beech. Of these, the best at their price are the folding cane-seated and backed chairs of Cambier (1), in varnished beech, at 4s. 2d. The same maker produces a varnished cherrywood chair, cane-seated, at 3s. 2d., and a beech wood ditto at 2s. 6d.

BADEN.

Dr. H. Meidinger, Carlsruhe, exhibits a sitting-room stove, constructed of dark tiles of a good chocolate-brown colour. It would not readily show discolouration by smoke or heat, and is so far well adapted to its purpose. The general plan of the stove is good, but it is not skilfully put together, and the glaze of the tiles is not of first-rate quality.

AUSTRIA.

The objects exhibited by Austria in class 91 are numerous and of very various character. Among those calling for observation are the following:—Elsinger and Son, of Vienna (No. 4), exhibit waterproof clothing and travelling objects; the former are light and seem to have a surface sufficiently tough and flexible to wear well. Driving capes and coats, leggings and gaiters, are shown; of the former a thin black waterproof coat, buttoned, and with loose sleeves, costs 12s.; a white, of better quality and finish, 15s.; gaiters, 2s. 6d.; haversacks of the same material. They also exhibit a waterproof tissue for hospitals, at 1s. 8d. per metre (39½ in.), of a very tough and durable texture. This is a valuable and cheap material for its purpose.

Unterwalder, of Vienna (27), exhibits tarpaulins of strong but rough texture; no information respecting their price has been furnished.

Attention is especially to be directed to the preparation of wood for matches and for window-blinds, screens, &c., the specimens shown for these purposes by Austria being superior to any exhibited by other countries; the wood is straight-grained deal, and, by means of planes made for the purpose on the principle of moulding-planes, it is cut into rods of ⅛ in. diameter and 3 ft. or 4 ft. long. From these rods the small round Viennese match-boxes, with which we are familiar in England, are filled; the long pieces are made into sun-blinds and screens of excellent construction, which are light, strong, and roll into small compass. For these the demand is great, the inexhaustible supply of wood which the Austrian fir-forests yield affording cheap material. The process of the match manufacture which at present enables Austria to supply, in great measure, the English market, might, it would seem, be introduced with advantage into towns like Gloucester, where the large importation of wood supplies material and where the manufacture of matches is already established, but by processes less economical of labour. Schuberth, of Ottakring, near Vienna (23), is the principal exhibitor of this prepared wood, and the blinds, &c., made from it. Franz Reif also exhibits wood prepared for matches, frames for sieves; thin deal veneers, for match and other boxes; sabots, and wooden spoons.

Porcelain-headed nails of various colours, for furniture and for fastening down carpets, are shown by No. 23, above mentioned.

Among domestic utensils are to be noted the wooden staved and turned work shown by Neumayer, of Vienna (18): barrels, tubs, churns, bread-platters, &c. The staved and hooped work is good; barrels, composed of various woods ornamentally arranged and well fitted. Their prices may be judged from the following: barrel with movable cover, chiefly oak, but composed, like a Scotch quaigh, of several woods, about 1 ft. by 9in. at its greatest diameter, 7s. 2d.; barrel churn, of oak, brass-hooped, with fittings, about 15in. by 12in., 9s. 6d.

A useful beefsteak beater is shown by Simon Marth, of Vienna (14); a wooden clothes-horse, by Weiss and Son, Vienna, similar in plan to that mentioned under Canada, is priced 5s.

Some of the cast iron household objects shown in class 40 (19) come also within class 91, as cheap utensils of domestic use; iron pots and skillets, enamelled within: a pot, well enamelled, 14 in. deep by 10 in. diameter, is priced 4s. 2d., and so on, in proportion to weight and size; a skillet, 7 in. diameter, 2½ in. deep, enamel-lined, 10d.

Beschorner and Co., Vienna (2), and J. Fr. Mayr (15), exhibit sarcophagi and coffins in metal and marble. Beschorner exhibits cast-iron sarcophagi, bronzed, silvered, brown lacquered, with gilt handles, plates, and ornaments, varying in price, according to size and finish, from 13s. 6d. to £36.

SPAIN.

Of the few objects shown by Spain in class 91 the following deserve notice:—

Manuel Mas and Son (1), from Crevillente, in the province of Alicant, exhibit matting of grass and rush, which forms an exception in one respect to most objects shown in the class. It is exceptionally good in point of taste, the specimens being for the most part woven in diapers of various colours, the diapers well designed, and the colours generally suitable and harmoniously combined. A fine Turkey red, yellow, and purple are employed, the colour of the grass being itself of a good yellowish tone. Some of the diapers are minute and very skilfully woven on a hemp warp. The coarser matting is plaited. One of these, rich in colour, of red, yellow, and purple, about 6 ft. by 3 ft. 6 in., of very strong material but rather rude work, is priced 6s. 6d.

Sandals of strong material and low price are shown by N. Peranton (2). These—in Spanish, *alpargatas*—have soles about half an inch thick, of twisted hemp, an edge of strong web, and black tape bands. For the army they are produced at less than 19s. per dozen. A better quality are 2s. 2d. per pair. (See the slippers noticed under France, No. 415.)

Similar sandals are shown by Miguel Casayus (4), from Huesca, and also another kind (*alborgas*) woven of tough bent grass, with toe and heel piece of the same material. These are sometimes gaily coloured by wools—scarlet, purple, &c.—woven with the grass fibres, and are also manufactured very cheaply.

Caps worn by the peasants and others are shown by the Sociedad Economica de los Amigos del Pais (Economic Society of Friends of the Country): these are from Murcia. Catalonia also sends scarlet and purple long caps of cloth similar to those worn by Italian peasants at Spezia and elsewhere on the coast. The scarlet dye is fine and the cloth fairly good. These cost only from 1s. 7d. to 2s. Some textiles are shown, but do not call for observation.

PORTUGAL.

In class 91 Portugal exhibits various pottery, and among the specimens shown are some which, while they can be commended

for the qualities of fitness and cheapness, that specially bring them within scope of class 91, deserve also to be noticed for satisfactory colour and forms of good outline. The texture of the porous pottery is good, and well fitted for the purpose; some of the other kinds want strength and solidity. A green glaze, used on many pieces, is admirable in colour, and varies in tone sufficiently to escape the dead monotony and flatness often remarkable in English and French glazes. Several pieces are made in direct imitation of old English ware, some marked with the Davenport anchor. They are inferior in texture to but better in colour than their prototypes. The principal exhibitors are the Commission of Poyares and others, from Coimbra. Eugenia Vasconcelles (9), from Lisbon, exhibits some vessels of cheap character notable for good form.

ITALY.

Chairs and specimens of straw and willow plaiting are the objects of exhibition most to be noticed from Italy. Of the former, those shown by J. Canepa (17), from Chiavari, Genoa, and by L. Descalzi (18), are to be commended. Most of their specimens come fairly into class 14 of furniture, but some for plain household use are included in class 91. They show well-made light chairs of beech, maple, &c., with woven white willow seats, varnished wood, at 3s. 4d., and stained at 3s. 6d. Straw-plait is shown by J. F. Bo (25), from Sestri—hats of cheap work and material, chiefly for the peasant class. V. Bertolani (27), from Modena, exhibits willow-plait, for hat-trimmings, of even work and well-prepared material.

CANADA.

Class 91 is represented in Canada by objects of considerable importance, though the number of exhibitors is small. One of the valuable industries of the country is the home manufacture, during the long winter, of woollen stuffs, cloths, shawls, blankets, &c.; these employ the females of the families and the young women generally in the farmers' households, and the results of this home work as shown in the Exhibition are most satisfactory.

Mdme. Bouchard, from St. Valier (1), exhibits various stuffs made with considerable skill, of excellent material, and apparently of the most durable character. In classes 28 and 30 she also exhibits strong unbleached linen of home manufacture at 1s. per yard, and dark check, a strong material for plain dresses, at 1s. per yard. Marcel Fortin (11) shows stout woollen cloth of dark dye 3s. per yard; good grey material, fit for shooting-suits, 3s. 6d. Mrs. Chandler (12) and James Busted show woollen socks and stockings of good quality, also of home manufacture. The conditions of the production of these objects at a period of the year when the severity of the climate causes a cessation of much ordinary female industry, and when a practical and profitable resource is of double importance, give their manufacture a greater social value than its extent would otherwise entitle it to claim; moreover, their excellent quality for purposes of domestic use and their cheapness, considering this quality, claim notice and commendation.

Messrs. Jacques and Hay (2) and Owen M'Garvey, Montreal (3), exhibit household furniture, perfectly plain in character, commendable for its substantial make and cheapness. The work is thoroughly honest, unpainted or varnished, but the surface finished up with glass paper, each article delivered in pieces for putting together. Oak and hickory are the woods chiefly used, the lighter parts, where no strain occurs, being of white pine; almost the whole is machine-made. A chair of hickory costs 1s. 3d.; an arm-chair, 2s.; a chest of drawers, about 3 ft. 6 in. high, framed of oak, with hickory mouldings and white pine drawers, costs 15s.; locks and neat-polished handles are forwarded for fitting on, and these are extra. This furniture is almost entirely made for exportation, and the West Indian islands are the chief market.

The portable folding clothes-horses—four movable arms radiating from a centre—as well as the louvre shutters for windows and meat-cupboards, exhibited by George Hager and Co., Montreal, and made at their factory, Shearers Mills, Lachine Canal, Montreal, come within class 91, as examples of convenience and economy: these are all machine-made, of hickory and white pine, and are manufactured chiefly for exportation.

In the preceding report incidental allusions only have been made to objects exhibited by Great Britain. In point of fact, our own country cannot be said to be represented at all in class 91, the objects, as has been already observed, that would have fairly come within the class on the score of their cheap production being distributed under their several heads in other groups, and no selection having been made by their producers to illustrate the very class which would have explained the condition and quality of their manufacture. Thus, the country which supplies the greater part of the world with cheap manufactured goods is unrepresented in an exhibition of the very objects of her principal commerce. In some instances, indeed, this failure seems to have been accidental. Amongst the woollen goods sent by Messrs. Firth, of Heckmondwike, Yorkshire, were some intended for class 91, as examples of cheap manufacture; but they are shown in class 30, No. 29, where their quality of cheapness is not necessarily noticed. This has been the case with others, also. There remain, therefore, but a few objects, to be found by diligent search in the British section; and it has not been thought so necessary to draw the attention of the visitor to them as to others, even similar in general character, shown by foreign countries. Among aids to domestic economy and convenience, it is, however, right to mention that the well-known knife-cleaning machines of Geo. Kent, High Holborn, are exhibited. The asylum at Redhill, Surrey, has sent proofs of the industry of its unfortunate inmates; and the Society for Promoting Female Education in the East shows needle-work, &c. Silver and Co., London, exhibit ready-made clothing and various objects of household use, at very low prices.

VEGETABLES.—CLASS 85.

BY ROBERT HOGG, LL.D., F.L.S.

THE only vegetables that are exhibited in a fresh state are a numerous collection of potatoes, consisting of no less than 158 sorts, in the Prussian department, and a number of esculent roots in the Algerian department. The latter will, perhaps, prove the more interesting to the visitor, as furnishing excellent examples of some of the esculent roots of tropical and sub-tropical regions, which are not frequently to be met with. Among these are large rhizomes of Colocasia odora, C. antiquorum, C. violacea, C. sagittifolia, and C. esculenta. Of these, the latter is the one most extensively used. It is known by the names of Egyptian ginger, cocoa-root, eddoes, and yams; but the last name is more properly applied to a very different root. The rhizomes or large fleshy roots of this plant abound in starch, and form an important article of food to the inhabitants of the countries where they are grown. A peculiarity of the flowers of this plant is that they have such a cadaverous smell that flies deposit their eggs in them as they would in a dead carcass. Several roots of Canna edulis and Canna discolor are also exhibited, the roots of which are used as food; and numerous varieties of Dioscorea alata, a species of yam, which appears to assume every form of round, long, and palmate in the shape of its tubers. There are also numerous varieties of the tubers Batatas or sweet potato—the potato of Shakspeare, which was largely imported every year from Spain and Portugal, under the name of "Spanish potatoes," during the sixteenth century. They are extensively grown in the south of Europe, but are too tender for outdoor cultivation in Great Britain.

Of dry farinaceous vegetables there are some very extensive collections in the Portuguese, the Italian and the Russian departments. In the Portuguese will be found a large collection of many varieties of haricots, which, unfortunately, are not distinguished by any special names, thereby precluding the possibility of making allusion to any of them individually. Here may also be seen many samples of "Geese," or, as it is called in England, chickling vetch. It is the Lathyrus sativus of botanists, and its seed is used in Italy, Spain, and Portugal for making bread; but so remarkable an effect does it produce on the animal system that it is necessary to mix it in half the quantity with wheat or other flour. If used alone for any length of time it produces extreme rigidity of the limbs; and swine fed upon it entirely lose the use of these members and become exceedingly fat, lying on the ground. In all the departments already named will be found numerous examples of the ram's-head or chick pea. It will be found marked "Pois Chiche." It has been called by botanists Cicer arietinum, from the great similarity the seed bears to a ram's head; and its English name of chick pea is in allusion to a fancied resemblance it has to a young bird coiled up in the shell. The seed is used in the south of Europe in the same way as we do garden peas, in soups and other dishes; and about Naples the children and common people eat them raw when they are yet tender. By the Spaniards, who call them "carvances" or "garavanzos," and the Neapolitans, who call them "cece caliato," they are roasted, ground, and formed into an agreeable infusion resembling coffee. A remarkable peculiarity of the plant is that during the excessive heat of summer the leaves and stems sparkle with minute drops of an extremely acid, thin, viscous liquid, which has been found to be oxalic acid in a state of purity.

In the Italian collection of haricots there is one that might be introduced with advantage into English gardens; it is called Fagioli del Giappone, and has been cultivated successfully by the Acclimatisation Society of Paris. It is a small round seed of the shape and colour of a green pea, and its colour would doubtless prove a high recommendation.

In most of the departments preserved vegetables may be found, but particularly in Holland and Russia. The Dutch are remarkable for the brilliancy of their colour and their fine condition. They consist of carrots, peas, cauliflower, red cabbage, Brussels sprouts, cabbage, chick peas, and turnip-rooted celery. Besides these, in the Russian department there is a large collection of preserved mushrooms.

BRITISH WAR MATERIAL AT THE PARIS EXHIBITION.

THE exhibits of British war material afford a clear and comprehensive view of the stage at which our armaments have arrived. Those of the Secretary of State for War are arranged, not in the interior of the main building, but in a large annexe entirely devoted to them, and situated near the English lighthouse. It is only just to acknowledge the care which has been taken to contribute everything which could give an insight into our resources for the manufacture of munitions of war, and the good taste shown in refraining from exhibiting all that the progress of science has rendered useless or out of date.

Each step in the construction of the rifle is presented for study; the shell, chilled projectiles, fuses, and rockets, are not merely to be seen as they would be in an arsenal or battery, but are shown in most beautifully prepared sections, which not only facilitate the task of comprehension, but cunningly draw the eye of the observer to their essential and characteristic features. The weight of the more important parts is labelled over each article; the guns and carriages are accompanied by drawings which fully explain how they have been built; and clever series of photographs detail what has been the past, and what will, probably, be the future history of attack by our ordnance upon masonry and iron plating. No warlike display in the Exhibition can compare with this, and England has certainly given other nations lessons from which they ought to derive considerable profit. The annexe is generally well filled with visitors, who seem to take a far greater amount of interest in what it contains than it is the lot of more peaceful wares to attract.

To give even a curtailed description of all exhibited would be to attempt a résumé of what has been done in the past ten years for our arms, a task which we certainly will not commence, but, at the risk of repeating much that is known, some few points must be noticed.

Enfield sends specimens of the wood and iron from which our small-arms are made, and shows, by an elaborate sequence of specimens, how the slab of metal and the block of walnut are developed into the lock, stock, barrel, and bayonet of a rifle; then, having put together the various parts, she teaches, by similar skilfully-arranged examples, what changes must be made in the old muzzle-loader, and what fresh pieces must be added in order to convert it into the Snider. The necessary alterations are less than one might be disposed to fancy; a small bit of the hammer is dispensed with, a short portion of the barrel is taken off, and a screw cut upon the outside of the breech; to this the breech-closing arrangement is screwed on, and the rifle is ready to take the new cartridge.

Below the Sniders themselves are the gauges by which the exact dimensions of its different constituent parts are tested, and here a remarkable feature of the weapon should be noticed: all its portions, with one exception, are made so exactly alike that any part, say the trigger, of one rifle is fit to take its place without alteration in any other; thus, if all the muskets of a battalion were taken to pieces and the parts put into a bag, fresh rifles might be immediately constructed by putting together the portions first coming to hand. With the exception of the United States, we believe the arms of no other nation possess this advantage.

In a glass case are Boxer's cartridges for the Snider. These are central-fire cartridges, with a strong base. The powder is held by a thin roll of copper, the bullet is hollowed out in front as well as in rear, so as to throw the centre of gravity back, and also to bring the weight, or, to speak technically, the radius of gyration, near the rim of the projectile—changes which add so much to its stability and accuracy of flight that the use of such a bullet has often been expressly covenanted against in rifle-matches.

The essential difference between cartridges for needle-guns, including the Chassepot, and our own is that the cases of the former are made very slight, so as to be consumed by the heat generated in each discharge, while ours are constructed of solid material; and the old case, as in fowling-pieces, has to be pulled out before a fresh charge can be inserted. The bore of our present Snider is too large; the twist of its rifling is too slow; perhaps the side pin is rather weak; still it looks and has proved a good breech-loader, and for a patch-work—that is, a converted arm—is a decided success.

Our light artillery is represented by a 12-pounder Armstrong gun. Compared with the field-pieces of other countries, its shapely lines, its delicate grooving, its highly-finished sights, and its screws for adjusting vertically and laterally, give it the appearance of a racer among cab-horses. As a foil to its beauty, the woodwork of the carriage gives an impression of heaviness and old-fashioned coarseness.

Underneath the 12-pounder are its three projectiles—case, to disperse a number of hardened lead bullets amongst an enemy not more than three or four hundred yards distant; common shell, containing 11 oz. of powder, to burn villages or to level an opponent's defences; and a somewhat shorter shell, the interior of which, built up of little segments of cylinders, holds only an ounce of powder, just sufficient to open the shell at the right moment, and to allow of the segments continuing their onward flight against a hostile column. A section of this shell shows two fuses fixed in it—the upper to scatter the segments three, four, or any assigned number of seconds after the firing of the gun; the lower, a percussion one, to fulfil the same offices upon the projectile touching the ground.

Directly opposite the field-piece, which it closely resembles, is a 40-pounder gun of position. There are besides three or four other guns, averaging about 5 tons in weight, and apparently sent to show the different ways in which we have constructed our 64-pounders and our lighter 7-in. guns. Two are breech-loaders—one on the original Armstrong plan, the other on Sir William's wedge system; a third is on the now abandoned shunt system of rifling. These represent our failures rather than our successes; for Sir W. Armstrong's original system of breech-loading, though answering fairly in small pieces, has been found to require the lifting of too great weights to be used in guns of even medium size. His wedge system has also been considered open to objection. As to his shunt plan of rifling, there was never any harm in it; but it was found that the shunt gun rifled without the shunt did quite as well as with. The form of rifling which we have now adopted, and which is shown in the two largest guns we exhibit, is the so-called Woolwich system, really as palpable an adaptation from the French as any English comedy imported from the Vaudeville or Gymnase.

Both these guns resemble the French, not only in the shape of the grooves, but in having an increasing twist—that is, the rifling twists very little at the breech, and a good deal at the muzzle, so that the strain of spinning round the projectile come gradually, and not all at once, upon the grooves and gun.

The advocates of this system were a long time stopped by the difficulty of making the buttons of the projectile take or fit into the different curves at breech and muzzle. This objection has been overcome by making one button smaller than the other. Major Palliser and the French artillery have both claimed priority in this invention.

The smaller of the two large pieces is a 9-in., and is probably capable of piercing any armour afloat. It is mounted on a wrought-iron naval carriage and slide, and is provided with very complete fittings, both for checking the recoil and for running forward the gun after loading.

Our show article is a 12-in., 23-ton muzzle-loader, mounted as the 9-in.; in point of size, it is only the third largest in the Exhibition, the French gun being 13 and the Prussian (Krupp's) 24 tons heavier. It must be remembered, however, that no piece of the same class as the largest French has ever been tried; that the one shown is the first-born of its race, and is made of very inferior material. The material of Krupp's gun is indeed excellent, but only two of this class have ever been constructed, and probably they have never been fired. On the other hand, we have made between Elswick and Woolwich at least eight or ten of our large cannon, and three of them have undergone a very fair amount of proof, one with great success; so that, though our 12-in. or 600-pounder is not yet quite a market article, it is years nearer to being produced on a large scale than any French or Prussian monster.

Before this piece stand two huge coils—one finished, the other in the rough. These represent the Fraser system of making Armstrong guns. All Armstrong guns are made from bars of iron, which are rolled, while hot, round a cylinder, as a piece of string is round the finger. Until lately the bar was only rolled once round; and as the coil thus formed was not nearly as thick as a gun, four or five had to be shrunk on, one over the other. This necessitated an enormous amount of highly-skilled labour in turning and boring, to ensure exact fits.

Mr. Fraser discovered that two or three bars might be coiled one over the other, as a coil can be wound round a cylinder in ten minutes, while it takes eight days to bore it out and to turn it down to proper dimensions; this improvement is attended with an enormous saving of labour. He also advocated the employment of a class of iron cheaper than that first used, and possessing better welding qualities. These, and some minor alterations, have effected a revolution in the system upon which heavy guns are now made in Woolwich Arsenal. From a military point of view the Fraser method is very important, as it facilitates production; and in an economic, it should be remembered that in this year's estimate it has already saved the country £130,000.

In a large glass case are exhibited our projectiles; besides the segment there are Boxer's shrapnell for rifled ordnance; these have the head made very light, to keep the centre of gravity of the projectile towards its rear, and have the bursting charge behind the bullets, so that the action of the powder upon the opening of the shell may tend rather to assist than to disarrange the flight of the contained balls.

The Hale rocket is another ingenious novelty. Formerly rockets had all sticks attached to serve them as rudders in their course through the air. The objection to the sticks lay in the fact that they always tended to steer the rockets into the eye of the wind. Hale's rockets have no sticks, but instead possess a rifle motion, caused by the escaping gas being so directed as to make the projectile rotate on its axis.

There are shown other rockets and also shot destined to carry lines to shipwrecked vessels that cannot otherwise establish a communication with the shore—life-saving apparatus somewhat out of keeping with the elaborately destructive character of the surrounding stores.

Although the Government keep the main room to themselves, they are not the only exhibitors of British war material. In an adjoining apartment Sir W. Armstrong, Mr. Whitworth, and Messrs. Brown, of Sheffield, show what the private enterprise of Englishmen can effect.

Sir W. Armstrong's collection, which comprises a fine 9-inch gun, is, as we might expect, very much a repetition of what the Government room contains. In one point he is ahead of our War Department, as he exhibits a wrought-iron field gun-carriage and limber, every part of which, except the ammunition-boxes, is made of metal.

Messrs. Whitworth show a 2-pounder mountain gun, weighing only 144 lb., a 7-inch steel muzzle-loader to throw a 150 lb. shot, several other pieces, and a case of rifles, some converted on the Snider system.

Messrs. Brown exhibit steel shot and iron armour plates, one of these latter being 13½ in. thick; a plate of the same thickness, and by the same firm, shows how unsuccessful have been the attempts of projectiles, some fired from a 13-ton gun, to effect penetration.

Major Palliser has a 9-inch gun made on his system by Sir W. Armstrong, of cast iron, round a tube of coiled wrought iron. This piece has fired four rounds with 55 lb., and over 100 with about 45 lb. of powder, and a 250 lb. projectile.

To ascertain the relative values of guns it is necessary to know the velocities of the shot. Electricity has been found to be the only agent sufficiently quick and subtle to enable us to appreciate the small intervals of time which we must notice for this purpose. Two electrical instruments exhibited stand out far above all others employed for this work—the first, by Captain Schultze, of the French Artillery, is in their portion of the Exhibition; the second, by the Rev. Mr. Bashforth, a celebrated Cambridge mathematician, is in ours. The peculiarity which gives both these instruments a decided superiority over all others is that the latter can only give the velocity of a projectile in one portion of its flight; hence we can never be sure that the answer given is not liable to error, and must only take the word of the operator that he has used every possible precaution. Schultze and Bashforth's, on the other hand, take the velocities of the same shot in six or eight parts of its path; and any good mathematician, upon being given the six or eight answers, can, by comparing them, tell whether they are true or not. It would be difficult to pronounce upon the relative merits of the two machines, but the English appears to be more simple and the easier to work.

THE CHASSEPOT RIFLE.—The Prussian gunmaker Specht has received from Paris a Chassepot gun similar to those adopted in the French army, and experiments have been made with it which, according to the Prussian journals, have furnished important results. The Chassepot is certainly superior to the Prussian needle-gun. Competitive essays have been made with the two. More than fifty officers of all arms witnessed them. The Chassepot was in the hands of M. Specht, the needle-gun in those of one of the best marksmen in the garrison. The arrangement was to fire with each weapon for a minute. The needle-gun was the first; it fired eight rounds and struck the target eight times. The Chassepot fired ten shots and was loaded the eleventh within the minute; it also reached the target eight times. The two guns were afterwards fired together during half a minute; the needle-gun discharged three shots, the Chassepot five. Six of them were found to have struck the target, but from which of the guns was not known.

The second volume of the "Paris Guide," published at the Librairie Internationale, 15, Boulevard Montmartre, and by Messrs. A. Lacroix, Verboeckhoven, and Co., of Brussels, is worthy of the first, which we noticed two or three months ago. It contains, in 1000 closely-printed pages, with a profusion of engravings, clever articles on the social life of Paris, in all its phases, by day or night; on the ways and manners of different classes of foreign visitors, "the English in Paris" being humourously caricatured by M. John Lemoinne; on the newspaper press of Paris; its public promenades, parks, and gardens; its suburban resorts and places of entertainment; its markets and food supply; its railways, omnibuses, and cabs; its courts of law and police; the hospitals, the cemeteries, and the Morgue. There is also an account of the municipal administration; the whole concluding with the Grand Exposition of 1867. Among the contributors to this volume are Mdme. Georges Sand, Alphonse Karr, Victor Hugo the younger, Edmond About, Paul Féval, Jules Janin, Legouvé, Edmond Texier, Petruccelli della Gattina, Emile de Girardin, Jules Simon, and many other well-known French writers of the day.

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